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FE6061 DO51

ENVIRONMENTAL COMPLIANCE INVESTIGATION REPORT
ANNETTE ISLAND FAA STATION
ANNETTE ISLAND, ALASKA

Contract No. DTFA04-90-C-200 14
Task Order No. 4

May 1992

Prepared for:

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Alaskan Region

ecology and environment, inc.
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International Specialists in the Environment

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EXECUTIVE SUMMARY

Pursuant to Task Order No. 4 of Contract No. DTFA04-90-C-20014 issued by the United States Department of Transportation, Federal Aviation Administration (FAA), Alaskan Region, Ecology and Environment, Inc. (E & E) was tasked to perform environmental compliance investigations (ECIs) at 19 FAA stations in Alaska, including the Annette Island FAA Station in the Alaskan Region South Sector. Annette Island is one of 68 stations currently under investigation by FAA.

The primary purpose of an ECI is to conduct a preliminary assessment/site investigation (PA/SI), which identifies and evaluates suspected releases of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances and suspected discharges of petroleum, oil and lubricant (POL) product potentially subject to regulation pursuant to the Clean Water Act (CWA) and/or the Alaska Oil and Hazardous Substance Act.

The secondary purpose of an ECI is to identify other potential environmental compliance issues at the station and observe hazardous material housekeeping and management practices. This Environmental Compliance Investigation Report (ECIR) summarizes E & E's investigation and presents E & E's findings and recommendations.

FAA does not own any facilities/sites at the Annette Island Station. All facilities/sites currently operated by FAA are leased to FAA Alaskan Region by the Metlakatla Indian Council. These include the Very High Frequency Omnidirectional Range Tactical Air Navigation/ Directional Finder (VORTAC/DF) Antenna Facility, Remote Center Air Ground (RCAG) Facility, and Nondirectional Beacon (NDB)/H-Marker Facility. All formerly leased facilities and sites on Annette Island were determined to have been put to beneficial use and have not been included in the ECIR unless FAA has indicated that it intends to take responsibility for the removal of FAA electrical equipment from that facility under its "good neighbor" policy. Good neighbor removals have been recommended at the Hangar Facility, Air Traffic Control Tower (ATCT) Facility, Glide Slope Transmitter (GS) Facility, Approach Lighting System (ALS) Facility, Middle Marker Facility, and Remote Receiver Facility.

E & E's recommendations are grouped into three categories: further removal and/or disposal action, further investigation, and no action. The recommendations for each facility are

categorized according to whether they relate to releases of CERCLA-regulated hazardous substances, POL discharges and/or equipment, or issues relating to other compliance matters and/or management practices. Examples of environmental activities in this category are the inventory and management of hazardous substances, the management of potential asbestos-containing materials (ACM), and the sampling of oil in electrical equipment.

Table ES-1 provides a general summary of FAA-leased properties that require further action and/or investigation and other properties that were formerly leased by FAA which have electrical equipment that was formerly used by FAA located on them. The latter category of facilities have been determined to have received a beneficial use and have not been evaluated for any concerns other than the presence of FAA electrical equipment.

Figure ES-1 provides a graphic summary of ECIR recommendations. The specific recommendations for the Annette Island FAA Station are as follows:

Further Action

- Remove and dispose of inactive electrical equipment at the following facilities:
  - VORTAC Facility - two non-polychlorinated biphenyl (PCB) rectifiers;
  - RCAG Facility - one PCB, five non-PCB capacitors;
  - Hanger Facility - seven PCB, 30 non-PCB transformers;
  - GS Facility - one non-PCB transformer; and
  - ATCT - one Non-PCB transformer.
- Secure and dispose of abandoned POL drums:
  - VORTAC Facility - one empty 55-gallon drum; and
  - RCAG Facility - 26 55-gallon drums.
- Include aboveground storage tanks (ASTs) and underground storage tanks (USTs) at the VORTAC and RCAG facilities in FAA Alaskan Region Tank Management Plan (AL 1050.15) and evaluate for compliance with applicable regulations.

Further Investigation

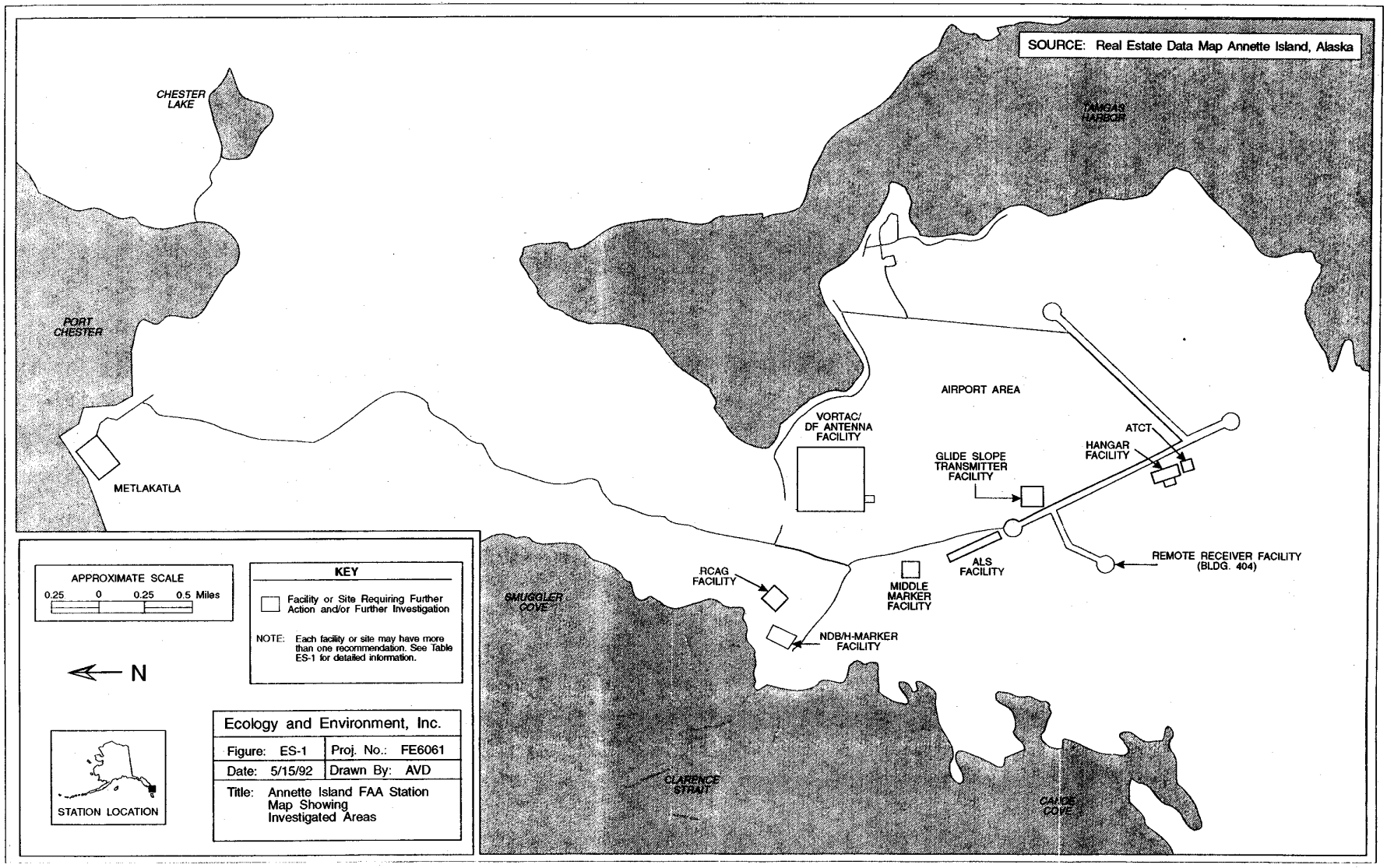
- Determine the extent of soil contamination at:
  - The VORTAC Facility - lead-contaminated soils; and
  - NDB/H-Marker Facility - lead-contaminated soils.

- Sampling of electrical equipment for PCBs at:
  - NDB/H-Marker Facility - one transformer;
  - GS Facility - two voltage stabilizers;
  - ALS Facility - 75 transformers and one capacitor;
  - Middle Marker Facility - two transformers; and
  - Remote Receiver Facility - one transformer.
- Positive identification of suspected ACM:
  - VORTAC Facility (Building 413);
  - RCAG Facility (Building 408); and
  - NDB/H-Marker Facility (Building 407).

Table ES-1

STATION INVESTIGATION SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Location	CERCLA CONCERNS			POL CONCERNS			Other Regulatory Compliance/ Management Practice Concerns		
	Further Action	Further Investigation	No Action	Further Action	Further Investigation	No Action	Further Action	Further Investigation	No Action
FAA-Owned Property									
None									
FAA-Leased Property									
VORTAC/DF Antenna Facility		X		X	X		X	X	
RCAG Facility			X	X	X		X	X	
NDB/H-Marker Facility		X				X		X	
Other Property									
Hangar Facility			X			X	X		
Glide Slope Transmitter Facility (Building 405)			X			X	X	X	
ATCT			X			X	X		
ALS Facility			X			X		X	
Middle Marker Facility (Building 406)			X			X		X	
Remote Receiver Facility (Building 404)			X			X		X	


SOURCE: Real Estate Data Map Annette Island, Alaska
CHESTER LAKE
PORT CHESTER
METLAKATLA
TAMGAS HARBOR
AIRPORT AREA
VORTAC/ DF ANTENNA FACILITY
GLIDE SLOPE TRANSMITTER FACILITY
HANGAR FACILITY
ATCT
REMOTE RECEIVER FACILITY (BLDG. 404)
ALS FACILITY
MIDDLE MARKER FACILITY
RCAG FACILITY
NDB/H-MARKER FACILITY
SMUGGLER COVE
CLARENCE STRAIT
CAMDEN COVE
APPROXIMATE SCALE
0.25 0 0.25 0.5 Miles
N
KEY
Facility or Site Requiring Further Action and/or Further Investigation
NOTE: Each facility or site may have more than one recommendation. See Table ES-1 for detailed information.
STATION LOCATION
Ecology and Environment, Inc.
Figure: ES-1
Proj. No.: FE6061
Date: 5/15/92
Drawn By: AVD
Title: Annette Island FAA Station Map Showing Investigated Areas

1. INTRODUCTION

Pursuant to Task Order No. 4 Contract No. DTFA04-90-C-20014 issued by the United States Department of Transportation (DOT) and the Federal Aviation Administration (FAA), Ecology and Environment, Inc. (E & E) was tasked to perform environmental compliance investigations (ECIs) at 19 FAA stations in the Alaskan Region, including the Annette Island FAA Station.

The primary purpose of the ECI was to conduct a preliminary assessment/site investigation (PA/SI), which identified and evaluated suspected releases of Comprehensive Environmental Response Compensation and Liability Act (CERCLA) hazardous substances and/or suspected discharges of petroleum, oil, and lubricant (POL) product potentially subject to regulation pursuant to the Clean Water Act (CWA) and/or the Alaska Oil and Hazardous Substances Act. CERCLA Section 120 requires that PA/SIs be conducted for each agency facility listed on the United States Environmental Protection Agency (EPA) Federal Agency Hazardous Waste Compliance Docket (Docket). To fulfill this requirement, FAA is conducting PA/SIs at all Alaskan Region stations listed on the Docket. In addition, FAA is also evaluating those currently FAA-owned and/or -operated stations it considers eligible for future Docket listing as a result of past or present hazardous waste activities or management practices regarding other hazardous substances. Annette Island has not been listed on the Docket, but is considered by FAA to be eligible for future listing.

FAA instructed E & E to include in its PA/SI activities individual facilities and sites that were formerly owned and/or operated by FAA and have not been subjected to beneficial use by a subsequent owner/operator. It is FAA's position that proactive identification and evaluation of potential FAA responsibilities at these former facilities and sites is appropriate because, in the absence of any beneficial use by a subsequent owner/operator, there is a reasonable certainty that potential environmental liabilities on such facilities/sites are the result of FAA operations. Any such facility or site discussed in this report was included in the ECI based on FAA concurrence with an E & E determination of there having been no beneficial use by the subsequent owner/operator.

The secondary purpose of the ECI was to, as time and resources allowed, identify other potential environmental compliance issues at the Annette Island FAA Station and observe hazardous material housekeeping and management practices. As part of this task, FAA instructed E & E to identify FAA materials or equipment (e.g., drums, etc.) currently situated on property in the station area not currently owned or leased by FAA and that may be appropriate for FAA to consider for future removal action by FAA as a "good neighbor" policy.

For purposes of this report, an FAA station is defined as a series of facilities and sites initially established by FAA for use in support of air navigation. A facility is defined as a distinct air navigation structure, support structures, and/or equipment, and the immediately surrounding area (e.g., VORTAC, RCAG, etc.). A site is defined as an area of property or an infrastructure component that is separate from a facility and could be a potential source of contamination or contain potentially contaminated areas (e.g., aboveground storage tanks [ASTs], underground storage tanks [USTs], utilities/power sources, landfills, lagoons, debris piles, etc.). A station includes both facilities and sites, although some facilities include sites.

This Environmental Compliance Investigation Report (ECIR) presents E & E's findings and recommendations. Section 2 lists the ECI objectives; Section 3 provides a station description and history, as well as a discussion of each facility and site associated with the station; Section 4 discusses the geology, groundwater, surface water, climate and sensitive environments relevant to the Annette Island Station; Section 5 details sample quality assurance (QA) and analyses; Section 6 discusses E & E's investigative activities and presents the facility and site findings and recommendations; and Section 7 presents exposure pathway information requested by EPA in its questionnaire "PA/SI Data Requirements for Federal Facility Docket Sites" that is not otherwise discussed in detail in Sections 3 through 6. E & E's ECIR findings and recommendations for each facility and site at the Annette Island FAA Station are categorized according to CERCLA release concerns, POL discharge concerns, and other compliance concerns and/or management practices.

2. OBJECTIVES

The objectives of the ECI for the Annette Island FAA Station are listed below according to the two major work tasks discussed in Section 1.

2.1 PRELIMINARY ASSESSMENT/SITE INVESTIGATION

PA/SIs included the following activities:

- Performing file searches and employee interviews on the station history, real estate issues, geology, groundwater, surface water, climate, sensitive environments, facility/site history and operations, potential sources of contamination, and beneficial use of formerly owned/operated facilities/sites;
- Preparing a site visit plan for environmental sampling;
- Locating potential sources of contamination;
- Sampling suspected areas of contamination and potential sources of contamination to determine contaminant constituents, estimated quantities of contaminated materials, and the potential hazard to human health and the environment;
- Determining and mapping past and presently owned and/or leased property at the station;
- Providing answers to the EPA questionnaire "Preliminary Assessment/ Site Investigation Data Requirements for Federal Facility Docket Sites" (see Appendix A);
- Recommending the need for further investigation or action at the station facilities and sites based on applicable regulatory standards and requirements and the assessment of potential hazards posed to human health and the environment; and
- Recommending appropriate remedial action.

POL-related activities included:

- Locating potential sources of contamination;

- Sampling suspected areas of contamination and potential sources of contamination to determine contaminant constituents, estimated quantities of contaminated materials, and the potential hazard to human health and the environment;

- Recommending the need for further investigation or action at the station facilities and sites based on applicable regulatory standards and requirements and the assessment of potential hazards posed to human health and the environment; and

- Recommending appropriate remedial action.

2.2 OTHER COMPLIANCE ISSUES AND MANAGEMENT PRACTICES OF CONCERN

This task involves the following activities:

- Identifying other potential environmental compliance issues and, if appropriate, recommending follow-up actions;

- Assessing, as appropriate, housekeeping and management practices with regard to hazardous materials at the station facilities and sites; and

- Identifying and estimating quantities of hazardous and other materials that could be removed by FAA from the properties being investigated.

E & E met these objectives during its station investigation and final report preparation. The ECI findings and E & E's conclusions and recommendations are discussed in subsequent sections of this report.

3. STATION BACKGROUND

This section provides a background discussion of the Annette Island FAA Station. Section 3.1 describes the Annette Island FAA Station and its history. In addition, each facility and site associated with the Annette Island FAA Station is defined. Relevant information concerning previous and concurrent investigations and actions conducted on or near the station are included in Section 3.2.

In this ECIR, facilities and sites were categorized as follows:

- Facilities and sites currently owned and operated and/or leased to another entity by FAA;
- Facilities and sites that are currently leased to FAA; and
- Other facilities and sites including sites formerly owned or operated by FAA that have not been beneficially used by any other party and properties previously leased to FAA by another entity that have not had beneficial use since FAA operations ceased. This category is also utilized in reference to formerly FAA-owned or -leased sites that have been subject to beneficial use by a subsequent owner/operator, but on which FAA materials or equipment have been identified as appropriate for removal under FAA's good neighbor policy.

3.1 STATION LOCATION AND DESCRIPTION

The Annette Island FAA Station is an air navigation station leased to the FAA by the Metlakatla Indian Council. The Annette Island FAA Station is located near the abandoned Annette Airport on Annette Island 6 miles south of the town of Metlakatla, population approximately 1,000 (see Figure 3-1) (USGS 1955). Annette Island is surrounded by saltwater and is situated near Dixon Entrance and the Canadian border, 15 miles south of Ketchikan. Facilities at the station lie within 0.5 mile of both Clarence Strait to the west and Tamgas Harbor to the east. The latitude and longitude for the airport are 55° 02'34" N and 131° 34'14" W. The United States Public Land Survey coordinates are Township 79 South, Range 92 East, Sections 4, 5, 8, and 9 Copper River Meridian.

FAA has operated the Annette Island FAA Station since the construction of air navigational facilities there in 1948. Since then, several facilities and properties have been added to or subtracted from the total station area. FAA currently leases all its facilities (identified below in the facility and site descriptions) from the Metlakatla Indian Council. A summary of past and present Annette Island FAA Station property holdings, as leased by FAA from other entities, is provided in Appendix B. A photo log showing facilities and sites at the Annette Island FAA Station is provided in Appendix F.

The Annette Island FAA Station is not continuously manned, but the station is visited regularly by FAA personnel based in Ketchikan. The Annette Island FAA Station was deactivated in 1973 prior to FAA's transfer of is title to the Metlakatla Indian Council.

Currently leased FAA facilities and sites at the Annette Island FAA Station are shown in Figure 3-2.

A number of other facilities and sites at the Annette Island Station were formerly leased by FAA. It was determined by the FAA COR and the E & E team leader prior to the ECI station visit that all of these facilities had received some beneficial use since they had ceased to be operated by FAA. Many of the structures at these facilities have been destroyed either by vandalism or natural processes. Due to the dense foliage on the island, they are no longer visible. To the extent these facilities could be identified, they were inspected to determine whether they contained electrical equipment that should be removed as part of FAA's good neighbor policy. Formerly leased facilities inspected during the ECI and determined to contain electrical equipment that should be removed are shown in Figure 3-2.

Two other federal facilities which are listed on the Federal Facilities Docket, the Annette Island Air Force Station (Docket #AK3572728654) and the White Alice Air Force Station (Docket #AK9141190083) are located approximately 1 mile southeast of the Annette Island FAA station.

3.1.1 FAA-Owned Facilities and Sites

The FAA has never owned any property at the Annette Island FAA Station.

3.1.2 FAA-Leased Facilities and Sites

3.1.2.1 VORTAC/DF Antenna Facility

The Very High Frequency Omnidirectional Range Tactical Air Navigation (VORTAC) is an active facility located approximately 1 mile northeast of the north end of the runway on 91.82 acres. The Directional Finder (DF) Antenna facility is also active and lies adjacent to the south side of the VORTAC on 0.92 acre (see Figure 3-2).

The VORTAC/DF Antenna facility consists of: the VORTAC (Building 413), which is fenced; two USTs and one AST; an antenna complex consisting of four towers located

immediately west of the fence; a live, high voltage transformer owned by Metlakatla Power and Light (MPL); the DF antenna tower; three tank foundations and piping; a rusted, empty, partially submerged 55-gallon drum; and a gravel road leading from the main road to the VORTAC building. An active, 1,000-gallon, gasoline UST; an inactive 500-gallon UST; an inactive, empty, 500-gallon, gasoline AST; and the live MPL transformer are located inside the fenced area. Most of the property is covered by standing water and muskeg (see Figure 3-3).

The VORTAC building is a wood-frame structure built on wood pilings, with dimensions of approximately 30 feet by 30 feet. The roof is flat and covered with a tar and gravel mixture. The original cedar shake shingles have been covered with aluminum siding. The antenna is located on top of the building. The VORTAC/DF Antenna facility has been leased and operated by FAA since 1963.

3.1.2.2 Remote Center Air/Ground Communications (RCAG) Facility

The RCAG is an active facility located approximately 1.5 miles northwest of the north end of the runway on 5.7 acres (see Figures 3-2 and 3-4).

The RCAG facility consists primarily of Building 408 which is of concrete block construction. Surrounding structures include an active 500-gallon gasoline UST, a storage shed, a live MPL transformer, and two antenna towers. Six inactive rectifiers are stored in Building 408. The surrounding property is mostly marsh and muskeg. A small pond is located south of Building 408. Eight empty 55-gallon drums were identified in a wooded area east of Building 408, four empty 55-gallon drums were identified in a marshy area southwest of Building 408, and one empty drum was found near the base of the north tower. The RCAG has been leased and operated by FAA since 1948.

3.1.2.3 Nondirectional Beacon (NDB)/H-Marker Facility

The NDB/H-Marker facility (also known as Long/Medium Range Adcock Radio Range [SBRA]) is an active facility located approximately 1.5 miles northwest of the north end of the runway on 10 acres, approximately 1,000 feet west of the RCAG Facility (see Figures 3-2 and 3-4).

The former NDB building reportedly burned completely in the early 1980s. Building 407, a small fiberglass building situated on the 500-square-foot foundation of the former NDB building is now used to house active electronic equipment. A fenced antenna tower with a live transformer are situated immediately to the north of the remaining foundation. The slab foundation of the former NDB building is bordered by burn debris and stressed vegetation. The surrounding property is mostly marsh and muskeg. A small pond is located east of the burned building. A small stream runs south from the pond underneath the road and drains into a marsh

area south of the road. A live transformer owned by Metlakatla Power and Light is located next to the road, directly south of the NDB building.

3.1.3 Other Facilities and Sites

3.1.3.1 Hangar Facility

The Hanger Facility is located along the south end of the runway (see Figure 3-2). It is currently used as a storage area by the Metlakatla Indian Community, consisting of a Main Storage Area and three smaller areas, Rooms A, B, C (see Figure 3-5). At the time of the ECI, 25 large transformers were stored in Room A; a constant circuit regulator, a 2-way circuit selector switch, and a street lighting controller transformer were found in Room B; six large inactive transformers were stored in the northeast corner of Room C; and two large, unmarked, inactive transformers were stored outside against the north side of the hangar building.

3.1.3.2 Air Traffic Control Tower (ATCT) Facility

The ATCT facility, which is located immediately south of the Hanger Facility, consists of a control tower and a transclosure at the base of the control tower that contains an inactive transformer. The ATCT facility formerly included additional structures (Building 240, Building 402, Building 403, and Building 608), which have been destroyed.

3.1.3.3 Glide Slope Transmitter (GS) Facility (Building 405)

The GS Facility is located along the north end of the runway (see Figure 3-2). The facility consists of Building 405 and associated structures including a large transformer and a tower. A small dry transformer is located on top of Building 405 and several pieces of electrical equipment, including transformers, capacitors, and voltage stabilizers, are located in the building. A number of 5-gallon drums with unknown contents were identified around Building 405. An abandoned transformer was identified in a transclosure located adjacent to Building 405. The transformer was leaking. The FAA has not leased this facility since 1973.

3.1.3.4 Approach Lighting System (ALS) Facility

The ALS Facility is located at the north end of the runway (see Figure 3-2). The ALS is comprised of 15 towers and the property adjoining them. Each tower contains five small inactive transformers (less than 1 gallon capacity each). One tower also contained a small capacitor. The FAA has not leased this facility since 1973.

3.1.3.5 Middle Marker Facility (Building 406)

The Middle Marker Facility is located immediately north of the ALS Facility and runway (see Figure 3-2). It includes Building 406 and the surrounding property. Two small inactive

transformers were located in Building 406. Approximately 24 abandoned drums were identified along the road between the Middle Marker Facility and ALS. There were no visible markings on these drums. Some were open topped and others were bunged and full. The FAA has not leased this facility since 1973.

3.1.3.6 Remote Receiver Facility (Building 404)

The Remote Receiver Facility is located approximately 1 mile southwest of the north end of the runway (see Figure 3-2). The Remote Receiver Facility includes Building 404 and the surrounding property. Approximately 50 feet northeast of Building 404, a swamp appeared to have an oily sheen and contained two empty drums and a rusted transformer. The FAA has not leased this facility since 1989.

3.2 PREVIOUS INVESTIGATIONS AND ACTIONS

3.2.1 FAA 1988 Site Investigation

In 1988, FAA performed a site investigation at Annette Island to inspect the station for hazardous materials (Eberhardt 1988a). That investigation did not develop findings relative to the FAA-leased or formerly leased facilities included in this report. In a follow-up report to the 1988 site investigation, the following facilities and sites were identified for further action (Eberhardt 1988b):

- GS facility (Building 405): transformers and capacitors i equipment cabinets, asbestos-containing material (ACM) floor tile;
- ALS: transformers and other unspecified electrical equipment;
- ALS field lighting system: responsible for electrical equipment installed after 1966, but polychlorinated biphenyl (PCB) content not specified; and
- Middle Marker (Building 406): transformers and capacitors in equipment cabinets, ACM floor tile.

3.2.2 United States Army Corps of Engineers (USACE) Site Investigation

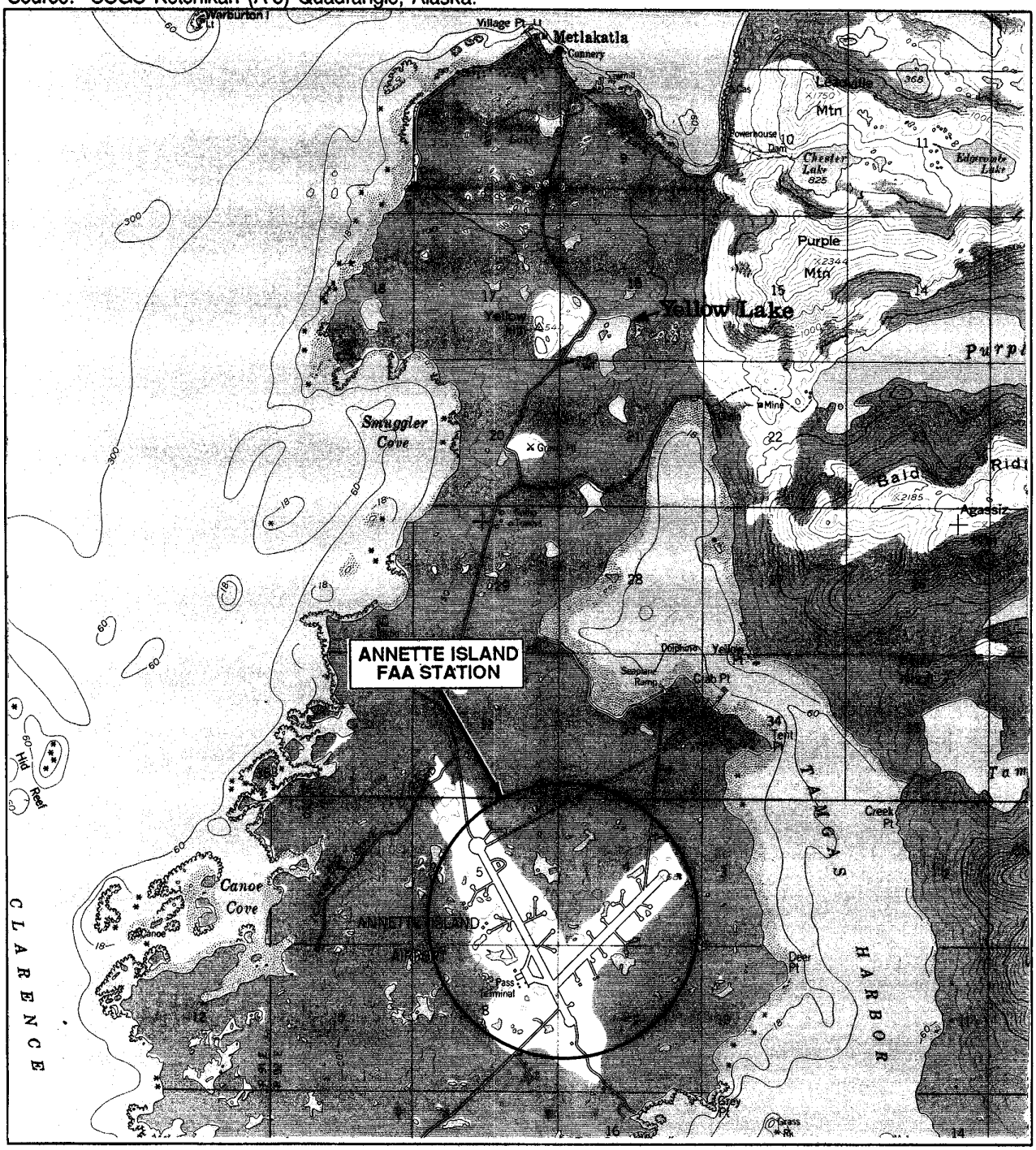
In September 1985, the DOD performed an inventory of materials and debris remaining at the landing field (USACE 1990). Electrical equipment stored in Room A of the Hanger Facility was sampled for PCBs. Results are included in Table 6-1.

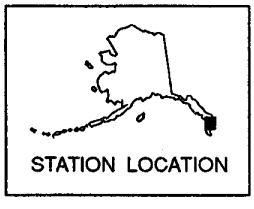
3.2.3 FAA 1990 UST Study

An UST investigation was performed by FAA in 1990 at the Annette Island Station (HLA 1990). Three tanks were identified during that investigation. Two USTs were located at the VORTAC facility and one UST was located at the RCAG facility. These three tanks were

present at the time of the ECI. In addition, the previous investigation indicated that a 515-gallon gasoline UST at the NDB had been removed in 1981.

Source: USGS Ketchikan (A-5) Quadrangle, Alaska.

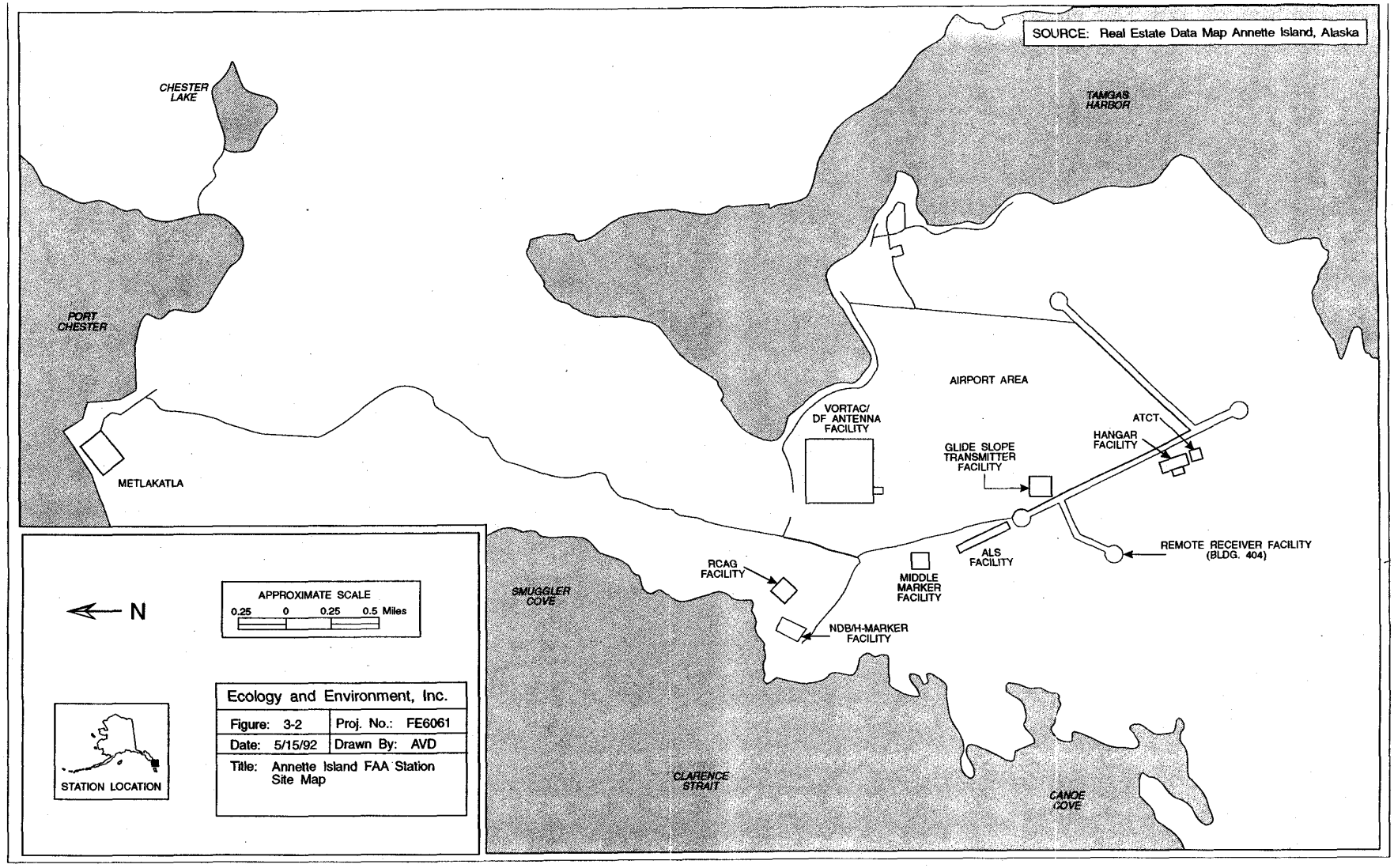


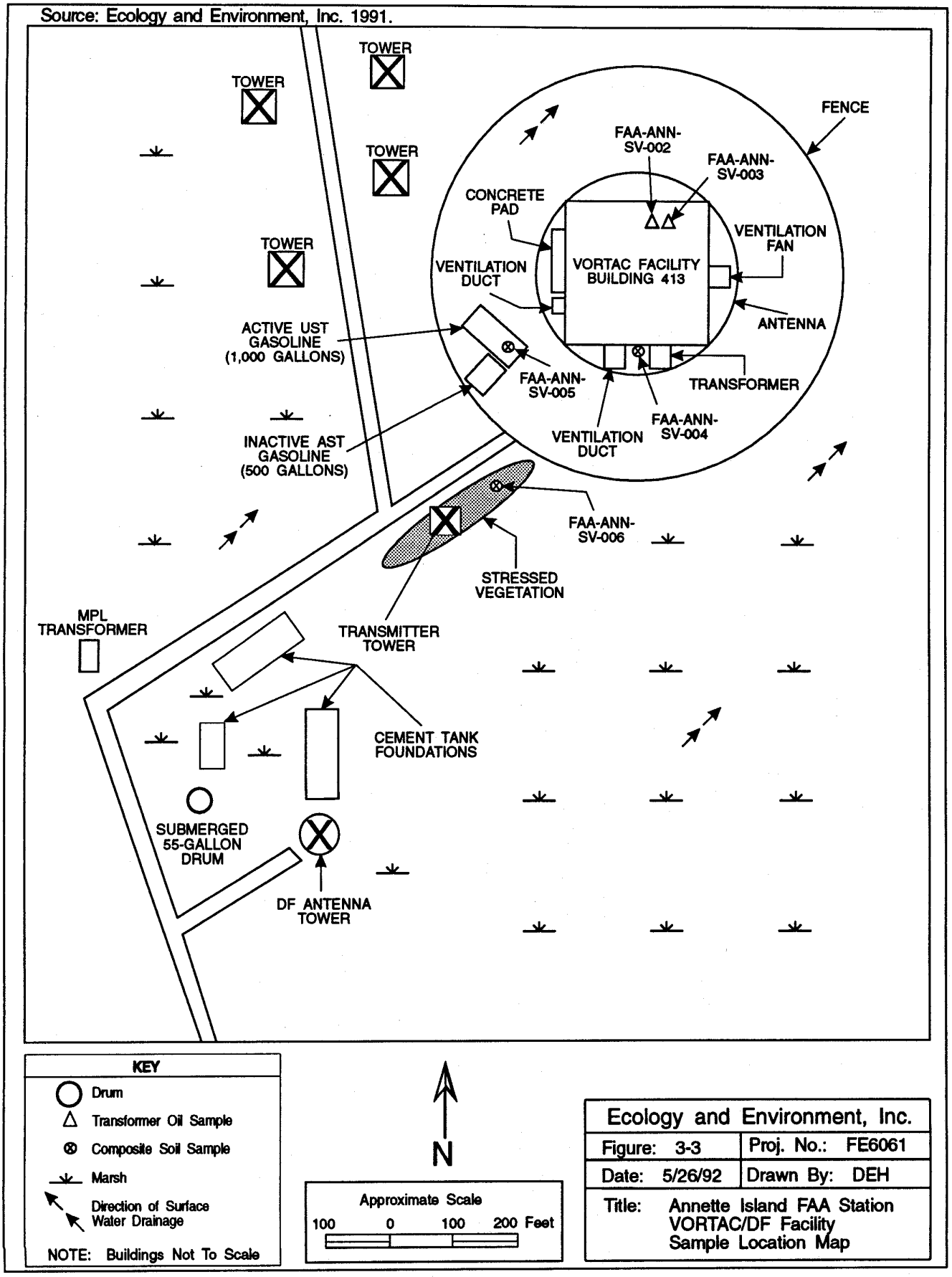


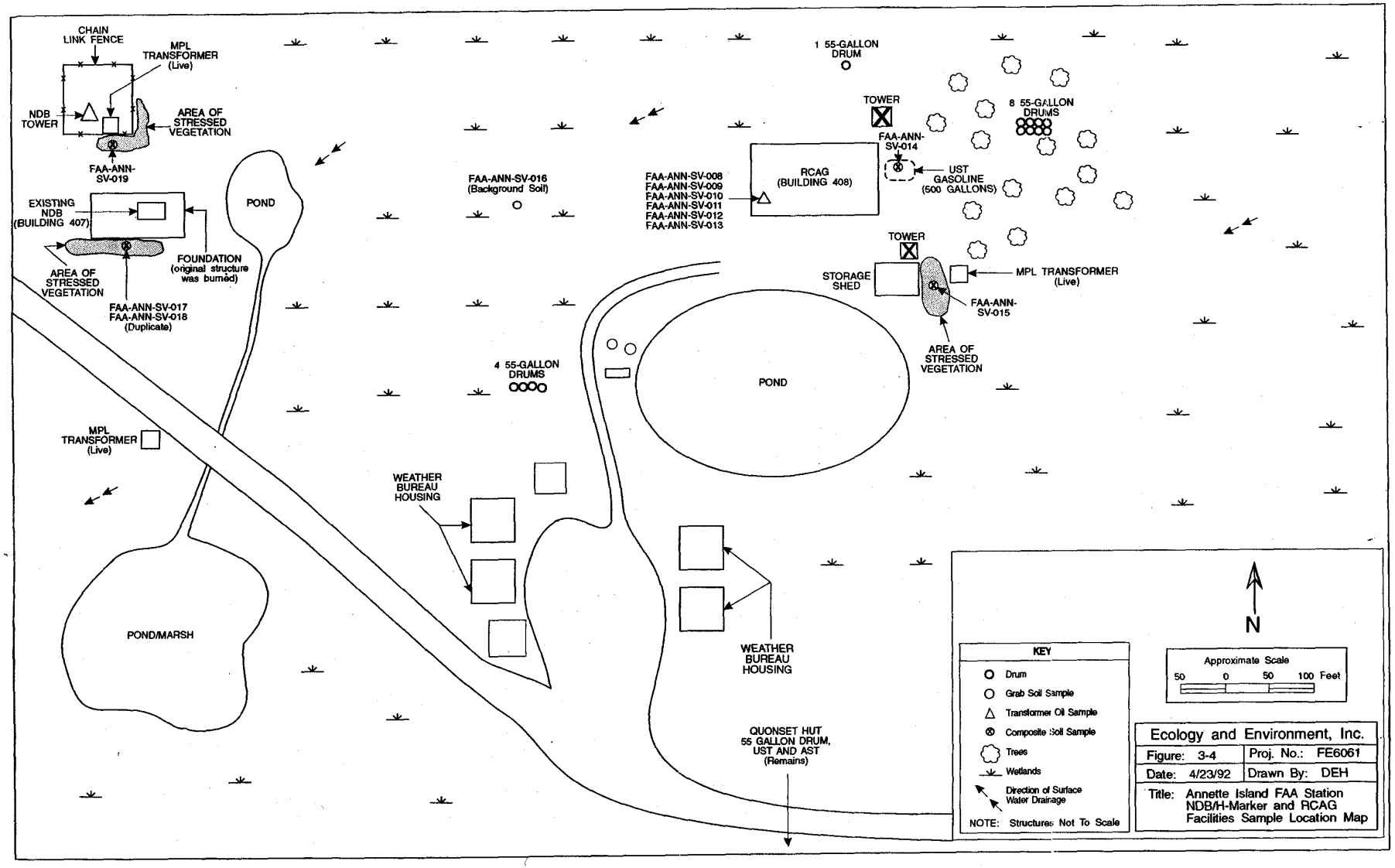
N

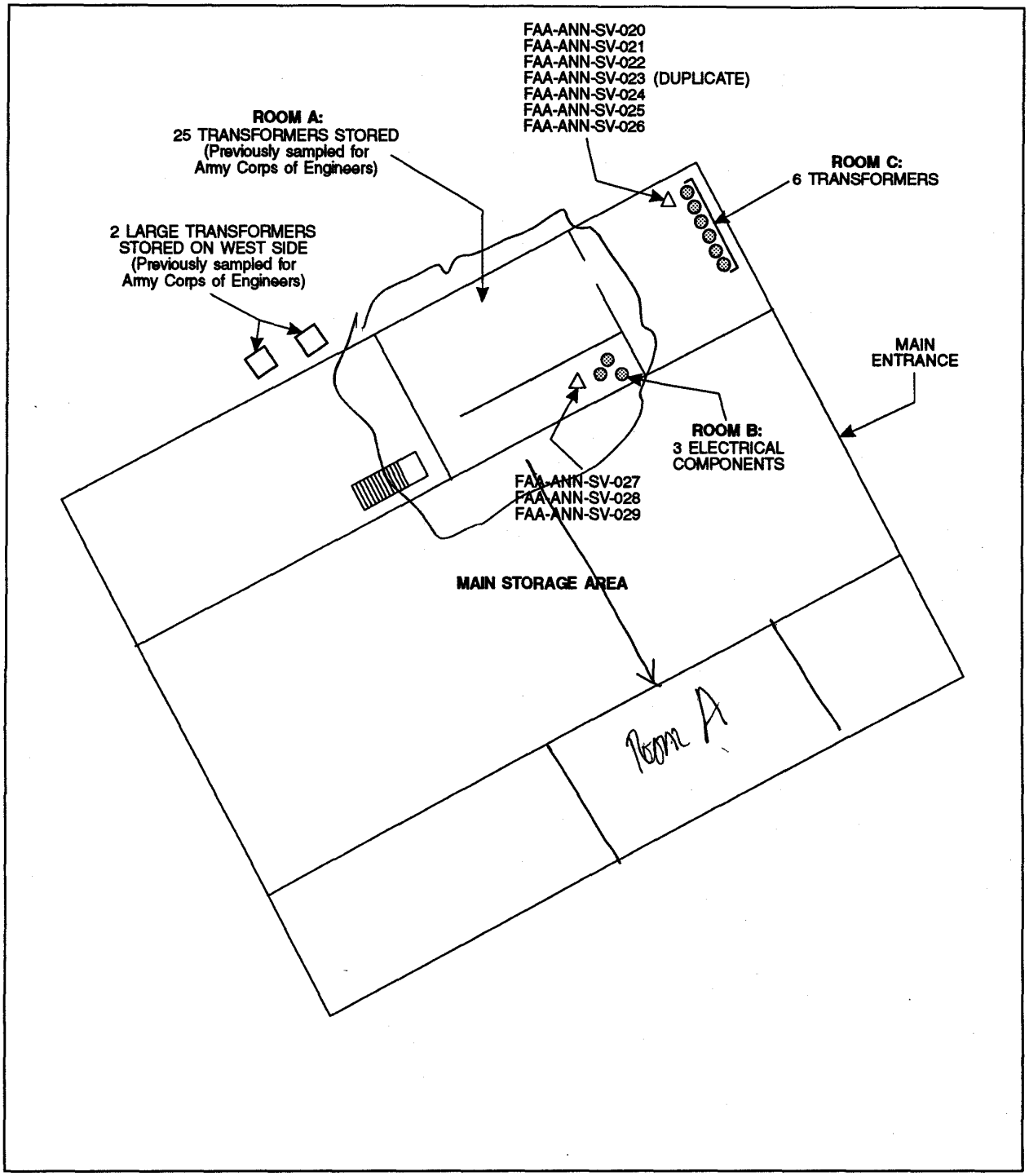
SCALE
0.5 0 0.5 1 Mile

Ecology and Environment, Inc.	
Figure: 3-1	Proj. No.: FE6061
Date: 4/23/92	Drawn By: DEH
Title: Annette Island FAA Station Location	


SOURCE: Real Estate Data Map Annette Island, Alaska
CHESTER LAKE
PORT CHESTER
METLAKATLA
TAMGAS HARBOR
AIRPORT AREA
VORTAC/ DF ANTENNA FACILITY
GLIDE SLOPE TRANSMITTER FACILITY
ATCT
HANGAR FACILITY
REMOTE RECEIVER FACILITY (BLDG. 404)
ALS FACILITY
MIDDLE MARKER FACILITY
RCAG FACILITY
NDB/H-MARKER FACILITY
SMUGGLER COVE
CLARENCE STRAIT
CANOE COVE
N
APPROXIMATE SCALE
0.25 0 0.25 0.5 Miles
STATION LOCATION
Ecology and Environment, Inc.
Figure: 3-2
Proj. No.: FE6061
Date: 5/15/92
Drawn By: AVD
Title: Annette Island FAA Station Site Map


Source: Ecology and Environment, Inc. 1991.
TOWER
TOWER
TOWER
TOWER
FENCE
FAA-ANN-SV-002
FAA-ANN-SV-003
CONCRETE PAD
VENTILATION FAN
VENTILATION DUCT
VORTAC FACILITY BUILDING 413
ANTENNA
ACTIVE UST GASOLINE (1,000 GALLONS)
FAA-ANN-SV-005
TRANSFORMER
INACTIVE AST GASOLINE (500 GALLONS)
VENTILATION DUCT
FAA-ANN-SV-004
FAA-ANN-SV-006
STRESSED VEGETATION
MPL TRANSFORMER
TRANSMITTER TOWER
CEMENT TANK FOUNDATIONS
SUBMERGED 55-GALLON DRUM
DF ANTENNA TOWER
KEY
Drum
Transformer Oil Sample
Composite Soil Sample
Marsh
Direction of Surface Water Drainage
NOTE: Buildings Not To Scale
N
Approximate Scale
100 0 100 200 Feet
Ecology and Environment, Inc.
Figure: 3-3
Proj. No.: FE6061
Date: 5/26/92
Drawn By: DEH
Title: Annette Island FAA Station
VORTAC/DF Facility
Sample Location Map


CHAIN LINK FENCE
MPL TRANSFORMER (Live)
NDB TOWER
AREA OF STRESSED VEGETATION
FAA-ANN-SV-019
EXISTING NDB (BUILDING 407)
FOUNDATION (original structure was burned)
AREA OF STRESSED VEGETATION
FAA-ANN-SV-017
FAA-ANN-SV-018 (Duplicate)
POND
FAA-ANN-SV-016 (Background Soil)
1 55-GALLON DRUM
TOWER
8 55-GALLON DRUMS
FAA-ANN-SV-014
UST GASOLINE (500 GALLONS)
FAA-ANN-SV-008
FAA-ANN-SV-009
FAA-ANN-SV-010
FAA-ANN-SV-011
FAA-ANN-SV-012
FAA-ANN-SV-013
RCAG (BUILDING 408)
TOWER
STORAGE SHED
MPL TRANSFORMER (Live)
FAA-ANN-SV-015
AREA OF STRESSED VEGETATION
4 55-GALLON DRUMS
POND
MPL TRANSFORMER (Live)
WEATHER BUREAU HOUSING
POND/MARSH
WEATHER BUREAU HOUSING
QUONSET HUT 55 GALLON DRUM, UST AND AST (Remains)
KEY
Drum
Grab Soil Sample
Transformer Oil Sample
Composite Soil Sample
Trees
Wetlands
Direction of Surface Water Drainage
NOTE: Structures Not To Scale
N
Approximate Scale
50 0 50 100 Feet
Ecology and Environment, Inc.
Figure: 3-4
Proj. No.: FE6061
Date: 4/23/92
Drawn By: DEH
Title: Annette Island FAA Station NDB/H-Marker and RCAG Facilities Sample Location Map



KEY
△ Transformer Oil Sample
NOTE: Buildings Not To Scale

N

Ecology and Environment, Inc.	
Figure: 3-5	Proj. No.: FE6061
Date: 5/26/92	Drawn By: DEH
Title: Annette Island FAA Station Hangar Facility Sample Location Map	

APPENDIX C

QUALITY ASSURANCE SUMMARY/DATA PACKAGE

SUMMARY OF DATA QUALITY ASSURANCE REVIEW

CLIENT: Federal Aviation Administration

ASC JOB NO.: 9101.975 and 9101.993

SITE: Annette Island FAA Facility

DATA REVIEWER: David A. Ikeda DATE OF REVIEW: November 21, 1991

Sample Matrix: Nine soil samples and one water sample (Total Metals, TRPH, VOCs, B/Ns, Pest/PCBs, VPH, EPH, OP-Pest, Cl-Herb), twenty transformer oil samples (PCBs), and one trip blank (VOCs).

Sample Nos.:

FAA-ANN-SV-001 (water)	FAA-ANN-SV-017 (soil)
FAA-ANN-SV-002 (oil)	FAA-ANN-SV-018 (soil)
FAA-ANN-SV-003 (oil)	FAA-ANN-SV-019 (soil)
FAA-ANN-SV-004 (soil)	FAA-ANN-SV-020 (oil)
FAA-ANN-SV-005 (soil)	FAA-ANN-SV-021 (oil)
FAA-ANN-SV-006 (soil)	FAA-ANN-SV-022 (oil)
FAA-ANN-SV-007 (oil)	FAA-ANN-SV-023 (oil)
FAA-ANN-SV-008 (oil)	FAA-ANN-SV-024 (oil)
FAA-ANN-SV-009 (oil)	FAA-ANN-SV-025 (oil)
FAA-ANN-SV-010 (oil)	FAA-ANN-SV-026 (oil)
FAA-ANN-SV-011 (oil)	FAA-ANN-SV-027 (oil)
FAA-ANN-SV-012 (oil)	FAA-ANN-SV-028 (oil)
FAA-ANN-SV-013 (oil)	FAA-ANN-SV-029 (oil)
FAA-ANN-SV-014 (soil)	FAA-ANN-SV-030 (oil)
FAA-ANN-SV-015 (soil)	FAA-ANN-SV-031 (water)
FAA-ANN-SV-016 (soil)	

The analytical data provided by Ecology and Environment, Inc., (E & E) Analytical Services Center (ASC) were reviewed for precision, accuracy, and completeness. All data were deemed acceptable as reported, with the following qualifications.

Nine soil samples and one water sample were analyzed for some/all of the following parameters: total metals, total recoverable petroleum hydrocarbons (TRPH), volatile organic compounds (VOCs), base/neutral extractable compounds (B/Ns), chlorinated pesticides/polychlorinated biphenyls (Pest/PCBs), organophosphorus pesticides (OP-Pest), chlorinated herbicides (Cl-Herb), volatile petroleum hydrocarbons as gasoline (VPH), and extractable petroleum hydrocarbons as diesel fuel (EPH). Twenty transformer oil samples were analyzed for PCBs. One trip blank was submitted for VOC analysis. Data were reviewed in accordance with the United States Environmental Protection Agency's (EPA's) Functional Guidelines for Reviewing Organic and Inorganic Analysis, 1988, SW-846 Guidelines, and/or the Generic Work Plan written by E & E for work associated with Federal Aviation Administration Alaska Region Task No. 4 activities.

TOTAL METALS AND TRPH DATA

1.0 HOLDING TIMES

Holding times are established and monitored to ensure analytical results accurately represent analyte concentrations in a sample at the time of collection. Exceeding the holding time for a sample generally results in a loss of the analyte due to a variety of mechanisms, such as deposition on the sample container walls or precipitation.

REVIEW RESULTS:

All sample holding time criteria were met. Sample FAA-ANN-SV-001 (water) was not preserved properly for TRPH analysis. The reported quantitation limit for TRPH for sample FAA-ANN-SV-001 was flagged as estimated (UJ).

Holding time limits:

Metals - 6 months (Mercury - 28 days)

TRPH - 28 days

2.0 INITIAL AND CONTINUING CALIBRATION VERIFICATION

Initial and continuing calibration verification solutions contain known concentrations of target analytes and are checked repeatedly throughout a sample batch run. The inability of the laboratory to perform acceptably on the calibration criteria may indicate that severe problems exist in the laboratory's analytical system. Associated sample data generated under such conditions should be considered suspect.

REVIEW RESULTS:

Quality control (QC) criteria for initial and continuing calibrations for all elements except arsenic and lead were achieved. The continuing calibration verification (CCV) standards for arsenic and lead in soil analyses were outside QC limits of 90 to 110 percent of the true value. A new calibration curve was generated using a single mid-range standard. Consequently, the following sample results for arsenic and lead were flagged as estimated (J or UJ) in the listed samples:

Arsenic	Lead
FAA-ANN-SV-004	FAA-ANN-SV-015
FAA-ANN-SV-017	FAA-ANN-SV-016
FAA-ANN-SV-018	
FAA-ANN-SV-019	

3.0 CONTRACT REQUIRED DETECTION LIMIT (CRDL) STANDARDS

CRDL standards contain analytes at concentrations corresponding to their respective CRDL values. These standards are run prior to and following sample analysis. These standards serve as a check for the linearity of the analytical system at or near an analyte's CRDL value.

REVIEW RESULTS:

All criteria for CRDL standards analysis were met.

4.0 BLANKS

Laboratory blank samples are analyzed and evaluated to determine the existence and magnitude of possible contamination problems. Generally, if analyte concentrations greater than the CRDL for a given analyte are found in a laboratory blank, it is likely that the analyte is present as a contaminant in some phase of the analysis procedure and associated sample concentrations may be biased high.

REVIEW RESULTS:

The preparation blank for the soil matrix contained lead at a concentration of 6.4 µg/L. Soil sample results below five times the level found in the method blank were flagged "UJ" (not detected, estimated quantitation limit) based on the soil contamination.

5.0 INDUCTIVELY COUPLED ARGON PLASMA (ICP) SPECTROMETRY INTERFERENCE CHECK SAMPLE

EPA interference check samples (ICSs) are analyzed to verify interelement and background correction factors used by the laboratory during sample analysis. If laboratory results for the ICS do not match the actual known concentration, it is possible that certain elements in solution are affecting the results when analyzing for other elements. Such matrix effects could be due to chemical interactions or physical interferences. It is assumed that similar problems would exist for sample results, and therefore, they should be treated with caution.

REVIEW RESULTS:

All criteria for ICP ICSs were achieved.

6.0 SPIKE SAMPLE ANALYSIS

The spiked sample analysis also is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. Sample spike recovery values that do not meet EPA Contract

Laboratory Program (CLP) criteria may indicate that sample analyte results are being attenuated in the analysis procedure. It is possible to estimate the bias of other sample results by noting the degree to which the spike concentration was elevated or lowered in the spike analysis. However, these bias results should be considered only crude approximations, as sample-specific problems may be the cause of the discrepancy, particularly in soil samples.

REVIEW RESULTS:

Spiked sample analyses were not performed for this sample set.

7.0 DUPLICATE SAMPLE ANALYSIS

Duplicate samples are analyzed to evaluate the precision of the sample results. The failure of the laboratory to reproduce similar results for a duplicate sample may indicate that the sample was of a non-homogeneous nature (particularly in soil samples), or perhaps method defects exist in the laboratory technique.

REVIEW RESULTS:

A duplicate analysis was not performed for this sample set.

8.0 LABORATORY CONTROL SAMPLE ANALYSIS

The laboratory control sample (LCS) is analyzed to serve as a monitor of the efficiency of the digestion procedure. The inability of the laboratory to successfully analyze an LCS is indicative of an analytical problem related to the digestion/sample preparation procedures and/or instrument operations.

REVIEW RESULTS:

All laboratory control sample analyses for water and soil were within control limits.

9.0 FURNACE ATOMIC ABSORPTION (AA) QUALITY CONTROL ANALYSIS

Each sample containing analytes requiring analysis by AA undergoes a post-digest spike for those analytes. The post digest spike recovery obtained determines how the analysis will proceed or whether analysis by

Method of Standard Addition (MSA) will be required. Low spike recovery values may indicate matrix effects are affecting sample results or that there may be a problem with the analytical procedure. MSA generally is considered less desirable as it may involve establishing a separate calibration curve for each analyte in each sample. The linearity of these individual calibration curves is assessed by computing the correlation coefficient. A low correlation coefficient is indicative of a poor calibration curve, and the results should be considered suspect.

REVIEW RESULTS:

QC criteria for post-digestion spike recovery were achieved for all analyses, except:

Sample	Matrix	Element	%R	QC Criteria
FAA-ANN-SV-014	Soil	Lead	82	85 - 115%
FAA-ANN-SV-015	Soil	Lead	52	85 - 115%
FAA-ANN-SV-016	Soil	Lead	71	85 - 115%

The reported concentrations and quantitation limits for these elements in the listed samples were flagged as estimated quantities (J or UJ).

10.0 ICP SERIAL DILUTION

Serial dilution analysis also is used to ascertain if significant physical or chemical interferences exist due to the sample matrix. A sample is reanalyzed following a five-fold dilution, and the results are compared relative to the original, undiluted sample results. Poor comparability indicates that sample results may be affected by relative concentrations of analytes in the sample, and some type of chemical or physical interference may be suspected.

REVIEW RESULTS:

All criteria for ICP Serial Dilution were achieved.

ORGANIC ANALYSES

1.0 HOLDING TIMES

Holding times are established and monitored to ensure analytical results accurately represent analyte concentrations in a sample at the time of collection. Exceeding the holding time for a sample generally affects a loss of the analyte due to a variety of mechanisms, such as deposition on the sample container wall, co-precipitation with particulates, or volatilization through leaks in the container.

REVIEW RESULTS:

All samples were extracted and analyzed within the required holding times, except:

Sample Number	Fraction	Matrix	Sampling Date	Analysis Date	Time Elapsed
FAA-ANN-SV-015	VOC	Soil	8/06/91	8/21/91	15 days
FAA-ANN-SV-016	VOC	Soil	8/06/91	8/21/91	15 days
FAA-ANN-SV-017	VOC	Soil	8/06/91	8/21/91	15 days
FAA-ANN-SV-018	VOC	Soil	8/06/91	8/21/91	15 days
FAA-ANN-SV-019RA	VOC	Soil	8/06/91	8/22/91	16 days

and:

Sample Number	Fraction	Matrix	Sampling Date	Extraction Date	Time Elapsed
FAA-ANN-SV-003	PCB	Oil	8/05/91	8/21/91	16 days
FAA-ANN-SV-004	B/N	Soil	8/05/91	8/20/91	15 days
	Pest/PCB	Soil	8/05/91	8/20/91	15 days
	OP-Pest	Soil	8/05/91	8/20/91	15 days
	Cl-Herb	Soil	8/05/91	8/20/91	15 days
FAA-ANN-SV-005	B/N	Soil	8/05/91	8/20/91	15 days
	Pest/PCB	Soil	8/05/91	8/20/91	15 days
FAA-ANN-SV-006	B/N	Soil	8/05/91	8/21/91	16 days
FAA-ANN-SV-007	PCB	Oil	8/07/91	8/21/91	15 days

Table (Cont.)

Sample Number	Fraction	Matrix	Sampling Date	Extraction Date	Time Elapsed
FAA-ANN-SV-008	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-009	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-010	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-011	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-012	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-013	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-014	B/N	Soil	8/06/91	8/21/91	15 days
FAA-ANN-SV-024	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-025	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-026	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-027	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-028	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-029	PCB	Oil	8/06/91	8/21/91	15 days
FAA-ANN-SV-030	PCB	Oil	8/06/91	8/21/91	15 days

Data, by sample and fraction, were flagged "J" (estimated quantity) or "UJ" (not detected, estimated quantitation limit) as appropriate.

Holding time criteria:

VOC, VPH: water - 14 days, if preserved
soil - 14 days

EPH, B/N, Pest/PCB, OP-Pest, Cl-Herb:
water - 7 days for extraction, 40 days for analysis
soil - 14 days for extraction, 40 days for analysis
oil - 14 days for extraction, 40 days for analysis

2.0 GAS CHROMATOGRAPH/MASS SPECTROMETER (GS/MS) TUNING

Prior to sample analysis, GC/MS tuning is carried out on the analytical instrumentation using bromofluorobenzene (BFB) for the VOC fraction and decafluorotriphenylphosphine (DFTPP) for the B/N fraction. For these compounds, certain ions in their mass spectra must be present in specific amounts to ensure the resolution, identification, and sensitivity of the system. The failure of the laboratory to meet GC/MS tuning criteria indicates that severe deficiencies exist with the GC/MS system being used.

REVIEW RESULTS:

All GC/MS tuning criteria for BFB and DFTPP were achieved for the VOC and B/N analysis. All criteria for system performance check compounds (SPCCs) also were achieved for both analyses.

3.0 CALIBRATION

Prior to sample analysis, the GC/MS system is calibrated initially at five concentrations for each VOC and B/N Target Compound List (TCL) compound to determine the linearity of response. For each compound, an Average Relative Response Factor (RRF) is determined, which is later used for compound quantification in sample results. A Relative Standard Deviation (RSD) for the average RRF also is calculated and must be less than the established QC percentage value. Low RRF values and high RSD values are indicative of unsatisfactory instrument calibration, and the system may not be capable of acceptable performance for compounds exhibiting such deficiencies. Calibration must be verified each 12-hour period for a GC/MS system; continuing calibration results check satisfactory maintenance and adjustment on a day-to-day basis. A continuing calibration RRF value is calculated for each TCL compound, and this value is compared to the initial calibration average RRF value. Continuing calibration compound results with low RRF values and/or RRFs with high percent difference values indicate the instrument is no longer correctly calibrated for these compounds.

The GC system is initially calibrated at five concentrations for each pesticide (except toxaphene), PCB, OP-Pest, and Cl-Herb TCL compound as well as for gasoline (VPH) and diesel (EPH). For each analyte, an average calibration factor (CF) is determined. An RSD for the average CF also is calculated and must be less than the established QC criteria for that analyte. High RSD values are indicative of unsatisfactory instrument linearity, and the system may not be capable of accurate quantitation for analytes exhibiting such deficiencies. The initial calibration must be verified each 12-hour period; continuing calibration results check instrument performance on a day-to-day basis. A continuing calibration CF is calculated for each analyte, and this value is compared to the average CF for that analyte from the initial

calibration. Continuing calibration CFs with high percent difference values indicate that the instrument is no longer correctly calibrated for these analytes.

REVIEW RESULTS:

All criteria for initial and continuing calibration check compounds (CCCs) and non-CCCs were achieved for the VOC and B/N analysis. All criteria for SPCCs and non-SPCCs also were achieved for both analyses.

All initial calibration criteria for GC analysis were achieved, except:

Date	GC ID	Fraction	Compounds	%RSD	QC Limit	Associated Samples
7/17/91	2B	Pest/PCB	g-BHC	15.3	≤ 10%	*
			Heptachlor	11.2	≤ 10%	
			d-BHC	11.7	≤ 10%	
8/12/91	1B	Pest/PCB	g-BHC	16.8	≤ 10%	**
			Methoxychlor	11.8	≤ 10%	
			d-BHC	12.4	≤ 10%	
9/06/91	1A	Pest/PCB	Aroclor 1254	16.4	≤ 10%	***
9/16/91	1B	OP-Pest	Naled	14.5	≤ 10%	****
			Dimethoate	12.7	≤ 10%	
			Ethion	11.0	≤ 10%	
			Guthion	10.5	≤ 10%	
9/18/91	#4	VPH	Gasoline	15.7	≤ 10%	*****

* Samples FAA-ANN-SV-015 through FAA-ANN-SV-019
** Samples FAA-ANN-SV-004, FAA-ANN-SV-005, FAA-ANN-SV-006, and FAA-ANN-SV-014
*** Samples FAA-ANN-SV-005, FAA-ANN-SV-006, FAA-ANN-SV-014 through FAA-ANN-SV-019
**** Samples FAA-ANN-SV-004, FAA-ANN-SV-006, FAA-ANN-SV-015 through FAA-ANN-SV-019
***** Samples FAA-ANN-SV-014 and FAA-ANN-SV-016

Positive results for the above compounds in the associated samples were flagged as estimated quantities (J).

All continuing calibration criteria for GC analysis were met for analytes that were detected in the samples.

4.0 BLANKS

Laboratory method blank samples are evaluated to assess the existence and magnitude of possible contamination problems. Comparison of sample results to compound concentrations found in blanks makes it possible to determine if these compounds were actually present in the sample or perhaps were introduced as a contaminant during some phase of the analytical procedure.

REVIEW RESULTS:

Frequency criteria were met for laboratory blank analysis.

The following compounds were detected in laboratory blanks at levels above Instrument Detection Limits (IDLs):

Blank ID	Frac.	Compound	Matrix	Conc. µg/kg	Associated Samples
MB	VOC	Methylene Chloride	Water	10[a]	FAA-ANN-SV-031
MB	VOC	Methylene Chloride	Soil	2.6	*
		Acetone	Soil	3.3	
MB1	VOC	Methylene Chloride	Soil	2.6	**
		Acetone	Soil	3.3	
MB3	VOC	Methylene Chloride	Soil	9.0	***
		Acetone	Soil	3.5	
MB	VOC	Methylene Chloride	Soil	3.9	FAA-ANN-SV-019RA
		Acetone	Soil	5.1	
MB	B/N	Bis(2-ethylhexyl)-phthalate	Soil	71.3	****
MB1	B/N	Bis(2-ethylhexyl)-phthalate	Soil	65.0	*****

* FAA-ANN-SV-006 and FAA-ANN-SV-014
** FAA-ANN-SV-004 and FAA-ANN-SV-005
*** FAA-ANN-SV-015 through FAA-ANN-SV-018
**** FAA-ANN-SV-004, FAA-ANN-SV-005, and FAA-ANN-SV-015 through FAA-ANN-SV-019

Table (Cont.)

***** FAA-ANN-SV-006 and FAA-ANN-SV-014
Frac. - Fraction
Conc. - Concentration

[a] - Blank results were reported in µg/L.

Reported levels of the above compounds in the samples were flagged "UJ" (estimated quantitation limit) if the concentrations were below five times the concentrations found in the appropriate blank (10 times for common solvents).

No other contaminants were present above IDLs in the blanks.

5.0 SURROGATE SPIKE RECOVERY

Laboratory performance for individual samples is established by means of surrogate spiking activities. All samples are spiked with surrogate compounds prior to preparation and analysis. Unusually low or high surrogate recovery values may indicate some deficiency in the analytical system or that some matrix effect exists, resulting in similarly low or high sample results for other compounds as well.

REVIEW RESULTS:

All surrogate spike recovery criteria for the VOC, B/N, pest/PCB, OP-Pest, VPH, and EPH analyses were achieved with the following exceptions:

Sample Number	Fraction	Compound	Matrix	%R	QC Limits
FAA-ANN-SV-006	VOC	Toluene-d8	Soil	124	81 - 117
FAA-ANN-SV-016	VOC	Toluene-d8	Soil	129	81 - 117
FAA-ANN-SV-017	VOC	Toluene-d8	Soil	220	81 - 117
		Bromofluorobenzene	Soil	73	74 - 121
FAA-ANN-SV-018	VOC	Toluene-d8	Soil	238	81 - 117
		Bromofluorobenzene	Soil	53	74 - 121
FAA-ANN-SV-019RA	VOC	Toluene-d8	Soil	119	81 - 117

Positive results in the VOC fraction for sample FAA-ANN-SV-006, FAA-ANN-SV-016, and FAA-ANN-SV-019RA were flagged as estimated quantities (J) based on the high surrogate recoveries.

Positive results and quantitation limits in the VOC fraction for sample FAA-ANN-SV-017 and FAA-ANN-SV-018 were flagged as estimated (J or UJ) based on the low surrogate recovery.

6.0 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) ANALYSIS

The MS/MSD analysis is designed to evaluate possible effects of the inherent sample matrix on target analyte recovery. To assess the possible matrix effect, specific analytes are spiked into a selected sample and a duplicate of that sample. The spike recoveries and relative percent difference (RPD) between the sample and the duplicate are then determined. Poor spike recoveries and high RPD values may indicate that a significant matrix effect is present and is adversely affecting sample results for that particular matrix or sample medium.

REVIEW RESULTS:

Sample FAA-ANN-SV-004 underwent MS and MSD analysis for the VOC and VPH fractions. Sample FAA-ANN-SV-006 underwent MS and MSD analysis for the B/N fraction. Sample FAA-ANN-SV-018 underwent MS analysis for the OP-Pest fraction. Sample FAA-ANN-SV-019 underwent MS and MSD analysis for the Pest/PCB, OP-Pest, and Cl-Herb (MS only) fractions. Samples FAA-ANN-SV-020 and FAA-ANN-SV-021 underwent MS and MSD analysis for the PCB fraction.

All MS and MSD percent recoveries (%Rs) met advisory QC guidelines, except:

Sample Number	Fraction	Compound	Matrix	%R	QC Limits
FAA-ANN-SV-019MS	Cl-Herb	Silvex	Soil	112	16 - 85%

No action was taken since the above compound was not detected in the listed sample.

All RPD values for the MS and MSD analyses were within QC guidelines.

7.0 INTERNAL STANDARDS PERFORMANCE

VOC and B/N TCL analytes identified in samples are quantified using internal standards that are spiked at specific concentrations into each sample. The retention times and chromatogram peak areas for the internal standards in each sample must fall within established QC limits to ensure that sample quantitation is correct.

REVIEW RESULTS:

All internal standard areas for the VOC and B/N analyses were within established QC limits, except:

Sample Number	Fraction	Internal Standard (I.S.)	(I.S.) Area	QC Limits
FAA-ANN-SV-016	VOC	DFB	123401	135949-543794
	VOC	CBZ	77600	114015-456060
FAA-ANN-SV-017	VOC	BCM	17860	31819-127267
		DFB	19301	135945-543794
		CBZ	7082	114015-456060
FAA-ANN-SV-018	VOC	BCM	16381	31819-127276
		DFB	19188	135945-543794
		CBZ	6017	114015-456060

BCM - Bromochloromethane
DFB - 1,4-Difluorobenzene
CBZ - d5-Chlorobenzene

Quantitation limits for volatile compounds associated with d5-chlorobenzene in sample FAA-ANN-SV-016 were flagged as unusable (R). All volatile quantitation limits for samples FAA-ANN-SV-017 and FAA-ANN-SV-018 were flagged as unusable (R) based on internal standard area outliers. For the samples listed above, positive results associated with the volatile internal standard areas outside QC limits were flagged as estimated quantities (J).

The internal standard recovery for chlorobenzene (VOC) was outside QC limits for sample FAA-ANN-SV-019. The reanalysis of the sample had all three internal standards within QC criteria. Both the original analysis and reanalysis for sample FAA-ANN-SV-019 (VOC) exceeded holding time criteria by one day. The reanalysis of FAA-ANN-SV-019 was reported with this memorandum, since all internal standard recoveries were within QC limits.

8.0 COMPOUND IDENTIFICATION

VOC and B/N Analysis

The presence of all TCL compounds found in samples is verified by comparing the mass spectra for the sample compounds to those of the calibration standards when run through the GC/MS systems. Retention times for sample compounds also are checked and should match retention times established by the calibration standards. If a sample compound does not meet these criteria, it should be rejected on the basis of tentative evidence.

REVIEW RESULTS:

All criteria for compound identification were achieved for both the VOC and B/N analyses.

Certain VOC and B/N target compounds were positively identified by the laboratory at levels above the instrument detection limits, but below the method quantitation limits. In these instances, the laboratory reported the compounds as "PRESENT", at an undetermined concentration. The actual estimated concentrations were recorded on the data reporting sheet in parentheses by the reviewer. A "J" qualifier was placed on these values, indicating that the concentrations should be interpreted as estimated quantities.

Aroclor 1254 was detected in samples FAA-ANN-SV-017 and FAA-ANN-SV-018 at levels below the method quantitation limit. The laboratory reported the estimated concentration of Aroclor 1254 for these samples with "J" qualifiers, indicating that the concentrations should be interpreted as estimated quantities.

The concentration of acetone in sample FAA-ANN-SV-014 exceeded the instrument calibration range. Consequently, the reported concentration for acetone in sample FAA-ANN-SV-014 was flagged as an estimated quantity (J).

Pesticide, OP-Pest, and Cl-Herb Analysis

Target pesticide compounds identified in a sample are confirmed by checking retention times. Confirmation also is achieved by running the sample through a second column (dual column confirmation). Positive sample results are tentative unless these criteria are met.

REVIEW RESULTS:

Dual column confirmation was employed to confirm all peaks detected on the primary column. All compound identification criteria were achieved.

VPH and EPH

Gasoline and diesel are identified by comparing peak patterns and peak areas of standard chromatograms in a specific hydrocarbon range to those of sample chromatograms.

REVIEW RESULTS:

Positive VPH results were reported for samples FAA-ANN-SV-005 and FAA-ANN-SV-016, which indicated the presence of gasoline. Although raw data confirmed the presence of volatile petroleum hydrocarbons, the sample chromatogram did not exhibit a peak pattern similar to the gasoline standard peak pattern. Therefore, the reported results for VPH as gasoline in these samples were flagged as tentatively identified at estimated concentrations (NJ).

PESTICIDE ANALYSIS

1.0 INSTRUMENT PERFORMANCE

Four separate requirements are established to ensure that adequate resolution is achieved by the chromatographic system: 1. DDT retention times are evaluated to check for adequate separation of individual components; 2. retention time windows are calculated and used in compound identification; 3. DDT and Endrin degradation are monitored to ensure column performance; and 4. retention time shifts for dibutylchlorendate (DBC) are checked to evaluate the condition of the separation column.

REVIEW RESULTS:

All four separate requirements for instrument performance were achieved.

2.0 CALIBRATION

Prior to sample analysis, calibration factors and percent relative standard deviations (%RSD) are checked in linearity standards to ensure satisfactory instrument calibration. Following the successful analysis of these standards, a specific 72-hour sample and standard analysis sequence must be followed.

REVIEW RESULTS:

Pest/PCB Analysis

The initial calibration %RSDs for pesticide standard mixes met QC criteria, except as listed in Section 3 under Organics Analysis.

Data Qualifiers

ND - The material was analyzed for, but was not detected. The associated numerical value is a method quantitation limit adjusted for sample weight/sample volume, extraction volume, percent solids, and sample dilution.

U - The material was analyzed for, but was not detected. The associated numerical value is a method quantitation limit adjusted for sample weight/sample volume, extraction volume, percent solids, and sample dilution.

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample. The data should be seriously considered for decision-making and are usable for many purposes.

UJ - The material was analyzed for, but was not detected. The associated numerical value is an estimated/adjusted quantitation limit. The associated numerical value may not accurately or precisely represent the concentration necessary to detect the analyte in this sample.

R - Quality Control indicates that data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

N - Presumptive evidence of presence of material (tentative identification). Confirmation of the analyte requires further analysis.

NJ - The analysis indicates that the analyte is tentatively identified and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

X - The reported result may be a combination of indistinguishable isomers.

METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
SAMPLE ID LAB : EE-91-18900 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		ND	U	0.11	MG/KG
Arsenic	(FU)	12	J	0.57	MG/KG
Lead	(ICP)	3900		5.7	MG/KG
Selenium	(FU)	ND	U	0.57	MG/KG
Thallium	(FU)	ND	U	0.57	MG/KG
Antimony	(ICP)	ND	U	6.8	MG/KG
Beryllium	(ICP)	ND	U	0.57	MG/KG
Cadmium	(ICP)	5.9		0.57	MG/KG
Chromium	(ICP)	70		1.1	MG/KG
Copper	(ICP)	77		2.3	MG/KG
Nickel	(ICP)	310		2.3	MG/KG
Silver	(ICP)	ND	U	1.1	MG/KG
Zinc	(ICP)	1000		1.1	MG/KG

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METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 91.0 %
SAMPLE ID LAB : EE-91-18901 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		1.1		0.11	MG/KG
Arsenic	(FU)	2.2		0.55	MG/KG
Lead	(ICP)	1100		5.5	MG/KG
Selenium	(FU)	ND	U	0.55	MG/KG
Thallium	(FU)	ND	U	0.55	MG/KG
Antimony	(ICP)	ND	U	6.6	MG/KG
Beryllium	(ICP)	ND	U	0.55	MG/KG
Cadmium	(ICP)	8.2		0.55	MG/KG
Chromium	(ICP)	76		1.1	MG/KG
Copper	(ICP)	19		2.2	MG/KG
Nickel	(ICP)	640		2.2	MG/KG
Silver	(ICP)	ND	U	1.1	MG/KG
Zinc	(ICP)	300		1.1	MG/KG

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METALS SECTION JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
SAMPLE ID LAB : EE-91-19149 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		0.12		0.11	MG/KG
Arsenic	(FU)	ND	U	0.68	MG/KG
Lead	(ICP) ~~(FU)~~	60		6.8	MG/KG
Selenium	(FU)	ND	U	0.68	MG/KG
Thallium	(FU)	ND	U	0.68	MG/KG
Antimony	(ICP)	ND	U	8.2	MG/KG
Beryllium	(ICP)	ND	U	0.68	MG/KG
Cadmium	(ICP)	ND	U	0.68	MG/KG
Chromium	(ICP)	18		1.4	MG/KG
Copper	(ICP)	5.2		2.7	MG/KG
Nickel	(ICP)	140		2.7	MG/KG
Silver	(ICP)	ND	U	1.4	MG/KG
Zinc	(ICP)	45		1.4	MG/KG

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METALS SECTION JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 59.0 %
SAMPLE ID LAB : EE-91-19150 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		ND	U	0.12	MG/KG
Arsenic	(FU)	1.4		0.85	MG/KG
Lead	(FU)	12	J	0.85	MG/KG
Selenium	(FU)	ND	U	0.85	MG/KG
Thallium	(FU)	ND	U	0.85	MG/KG
Antimony	(ICP)	ND	U	10	MG/KG
Beryllium	(ICP)	ND	U	0.85	MG/KG
Cadmium	(ICP)	ND	U	0.85	MG/KG
Chromium	(ICP)	9.3		1.7	MG/KG
Copper	(ICP)	14		3.4	MG/KG
Nickel	(ICP)	8.4		3.4	MG/KG
Silver	(ICP)	ND	U	1.7	MG/KG
Zinc	(ICP)	47		1.7	MG/KG

METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
SAMPLE ID LAB : EE-91-18902 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		ND	U	0.13	MG/KG
Arsenic	(FU)	ND	U	0.66	MG/KG
Lead	(FU)	23	J	0.66	MG/KG
Selenium	(FU)	ND	U	0.66	MG/KG
Thallium	(FU)	ND	U	0.66	MG/KG
Antimony	(ICP)	ND	U	7.9	MG/KG
Beryllium	(ICP)	ND	U	0.66	MG/KG
Cadmium	(ICP)	1.8		0.66	MG/KG
Chromium	(ICP)	3.9		1.3	MG/KG
Copper	(ICP)	4.1		2.6	MG/KG
Nickel	(ICP)	3.8 ~~3.1~~	D 10/24/91 U	2.6	MG/KG
Silver	(ICP)	ND		1.3	MG/KG
Zinc	(ICP)	39		1.3	MG/KG

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DRAFT

METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
SAMPLE ID LAB : EE-91-18903 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		ND	U	0.45	MG/KG
Arsenic	(FU)	ND	U	2.3	MG/KG
Lead	(FU)	21	J	2.3	MG/KG
Selenium	(FU)	ND	U	2.3	MG/KG
Thallium	(FU)	ND	U	2.3	MG/KG
Antimony	(ICP)	ND	U	27	MG/KG
Beryllium	(ICP)	ND	U	2.3	MG/KG
Cadmium	(ICP)	ND	U	2.3	MG/KG
Chromium	(ICP)	ND	U	4.5	MG/KG
Copper	(ICP)	ND	U	9.1	MG/KG
Nickel	(ICP)	ND	U	9.1	MG/KG
Silver	(ICP)	ND	U	4.5	MG/KG
Zinc	(ICP)	8.0		4.5	MG/KG

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METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
SAMPLE ID LAB : EE-91-18904 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		0.17		0.12	MG/KG
Arsenic	(FU)	26	J	0.62	MG/KG
Lead	(ICP)	9500 ~~2500~~ 10/24/91		6.2	MG/KG
Selenium	(FU)	ND	U	0.62	MG/KG
Thallium	(FU)	ND	U	0.62	MG/KG
Antimony	(ICP)	ND	U	7.4	MG/KG
Beryllium	(ICP)	ND	U	0.62	MG/KG
Cadmium	(ICP)	3.3		0.62	MG/KG
Chromium	(ICP)	440		1.2	MG/KG
Copper	(ICP)	200		2.5	MG/KG
Nickel	(ICP)	38		2.5	MG/KG
Silver	(ICP)	ND	U	1.2	MG/KG
Zinc	(ICP)	2500		1.2	MG/KG

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85

DRAFT

METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
SAMPLE ID LAB : EE-91-18905 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		0.17		0.11	MG/KG
Arsenic	(FU)	14	J	0.56	MG/KG
Lead	(ICP)	2800		5.6	MG/KG
Selenium	(FU)	ND	U	0.56	MG/KG
Thallium	(FU)	ND	U	0.56	MG/KG
Antimony	(ICP)	ND	U	6.7	MG/KG
Beryllium	(ICP)	ND	U	0.56	MG/KG
Cadmium	(ICP)	2.1		0.56	MG/KG
Chromium	(ICP)	82		1.1	MG/KG
Copper	(ICP)	68		2.2	MG/KG
Nickel	(ICP)	15		2.2	MG/KG
Silver	(ICP)	ND	U	1.1	MG/KG
Zinc	(ICP)	1600		1.1	MG/KG

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86

METALS SECTION JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
SAMPLE ID LAB : EE-91-18906 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER		RESULTS	Q	QNT. LIMIT	UNITS
Mercury		ND	U	0.12	MG/KG
Arsenic	(FU)	4.0	J	0.60	MG/KG
Lead	(ICP)	1100		6.0	MG/KG
Selenium	(FU)	ND	U	0.60	MG/KG
Thallium	(FU)	ND	U	0.60	MG/KG
Antimony	(ICP)	ND	U	7.2	MG/KG
Beryllium	(ICP)	ND	U	0.60	MG/KG
Cadmium	(ICP)	2.7		0.60	MG/KG
Chromium	(ICP)	170		1.2	MG/KG
Copper	(ICP)	17		2.4	MG/KG
Nickel	(ICP)	100		2.4	MG/KG
Silver	(ICP)	ND		1.2	MG/KG
Zinc	(ICP)	250		1.2	MG/KG

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S7

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18900 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	u	11
Bromomethane	ND	u	11
Vinyl Chloride	ND	u	11
Chloroethane	ND	u	11
Methylene Chloride	ND	uJ	4.6
1,1-Dichloroethene	ND	u	5.7
1,1-Dichloroethane	ND	u	5.7
Total-1,2-Dichloroethene	ND	u	5.7
Chloroform	ND	u	5.7
1,2-Dichloroethane	ND	u	5.7
1,1,1-Trichloroethane	ND	u	5.7
Carbon Tetrachloride	ND	u	5.7
Bromodichloromethane	ND	u	5.7
1,2-Dichloropropane	ND	u	5.7
trans-1,3-Dichloropropene	ND	u	5.7
Trichloroethene	ND	u	5.7
Dibromochloromethane	ND	u	5.7
1,1,2-Trichloroethane	ND	u	5.7
Benzene	ND	u	5.7
cis-1,3-Dichloropropene	ND	u	5.7
2-Chloroethylvinyl Ether	ND	u	11
Bromoform	ND	u	5.7
Tetrachloroethene	ND	u	5.7
1,1,2,2-Tetrachloroethane	ND	u	5.7
Toluene	22		5.7
Chlorobenzene	ND	u	5.7
Ethylbenzene	ND	u	5.7
Acetone	ND	uJ	9.2
Carbon Disulfide	ND	u	5.7
2-Butanone	ND	u	11
Vinyl Acetate	ND	u	11
2-Hexanone	ND	u	11
Styrene	ND	u	5.7
Total Xylenes	ND	u	5.7
4-Methyl-2-Pentanone	2.8	J	11

025

11/21/9.

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 91.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18901 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	U	11
Bromomethane	ND	U	11
Vinyl Chloride	ND	U	11
Chloroethane	ND	U	11
Methylene Chloride	ND	UJ	4.0
1,1-Dichloroethene	ND	U	5.5
1,1-Dichloroethane	ND	U	5.5
Total-1,2-Dichloroethene	ND	U	5.5
Chloroform	ND	U	5.5
1,2-Dichloroethane	ND	U	5.5
1,1,1-Trichloroethane	ND	U	5.5
Carbon Tetrachloride	ND	U	5.5
Bromodichloromethane	ND	U	5.5
1,2-Dichloropropane	ND	U	5.5
trans-1,3-Dichloropropene	ND	U	5.5
Trichloroethene	ND	U	5.5
Dibromochloromethane	ND	U	5.5
1,1,2-Trichloroethane	ND	U	5.5
Benzene	ND	U	5.5
cis-1,3-Dichloropropene	ND	U	5.5
2-Chloroethylvinyl Ether	ND	U	11
Bromoform	ND	U	5.5
Tetrachloroethene	ND	U	5.5
1,1,2,2-Tetrachloroethane	ND	U	5.5
Toluene	ND	U	5.5
Chlorobenzene	ND	U	5.5
Ethylbenzene	ND	U	5.5
Acetone	ND	UJ	3.3
Carbon Disulfide	ND	U	5.5
2-Butanone	ND	U	11
Vinyl Acetate	ND	U	11
2-Hexanone	ND	U	11
Styrene	ND	U	5.5
Total Xylenes	ND	U	5.5
4-Methyl-2-Pentanone	ND	U	11

032

TEST CODE :SPURG 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-19149 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	U	14
Bromomethane	ND	U	14
Vinyl Chloride	ND	U	14
Chloroethane	ND	U	14
Methylene Chloride	ND	UJ	4.9
1,1-Dichloroethene	ND	U	6.8
1,1-Dichloroethane	ND	U	6.8
Total-1,2-Dichloroethene	ND	U	6.8
Chloroform	ND	U	6.8
1,2-Dichloroethane	ND	U	6.8
1,1,1-Trichloroethane	ND	U	6.8
Carbon Tetrachloride	ND	U	6.8
Bromodichloromethane	ND	U	6.8
1,2-Dichloropropane	ND	U	6.8
trans-1,3-Dichloropropene	ND	U	6.8
Trichloroethene	ND	U	6.8
Dibromochloromethane	ND	U	6.8
1,1,2-Trichloroethane	ND	U	6.8
Benzene	ND	U	6.8
cis-1,3-Dichloropropene	ND	U	6.8
2-Chloroethylvinyl Ether	ND	U	14
Bromoform	ND	U	6.8
Tetrachloroethene	ND	U	6.8
1,1,2,2-Tetrachloroethane	ND	U	6.8
Toluene	2.1	J	6.8
Chlorobenzene	ND	U	6.8
Ethylbenzene	ND	U	6.8
Acetone	ND	UJ	12
Carbon Disulfide	ND	U	6.8
2-Butanone	ND	U	14
Vinyl Acetate	ND	U	14
2-Hexanone	ND	U	14
Styrene	ND	U	6.8
Total Xylenes	ND	U	6.8
4-Methyl-2-Pentanone	ND	U	14

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
L = PRESENT BELOW STATED DETECTION LIMIT

098

TEST CODE :SPURG 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 59.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-19150 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	U	76
Bromomethane	ND	U	76
Vinyl Chloride	ND	U	76
Chloroethane	ND	U	76
Methylene Chloride	ND	UJ	49
1,1-Dichloroethene	ND	U	39
1,1-Dichloroethane	ND	U	39
Total-1,2-Dichloroethene	ND	U	39
Chloroform	ND	U	39
1,2-Dichloroethane	ND	U	39
1,1,1-Trichloroethane	ND	U	39
Carbon Tetrachloride	ND	U	39
Bromodichloromethane	ND	U	39
1,2-Dichloropropane	ND	U	39
trans-1,3-Dichloropropene	ND	U	39
Trichloroethene	ND	U	39
Dibromochloromethane	ND	U	39
1,1,2-Trichloroethane	ND	U	39
Benzene	ND	U	39
cis-1,3-Dichloropropene	ND	U	39
2-Chloroethylvinyl Ether	ND	U	76
Bromoform	ND	U	39
Tetrachloroethene	ND	U	39
1,1,2,2-Tetrachloroethane	ND	U	39
Toluene	12	J	39
Chlorobenzene	ND	U	39
Ethylbenzene	ND	U	39
Acetone	2200	J	76
Carbon Disulfide	33	J	39
2-Butanone	18	J	76
Vinyl Acetate	ND	U	76
2-Hexanone	ND	U	76
Styrene	ND	U	39
Total Xylenes	ND	U	39
4-Methyl-2-Pentanone	ND	U	76

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18902 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER	RESULTS		Q	QNT. LIMIT
Chloromethane	ND		UJ	13
Bromomethane	ND		UJ	13
Vinyl Chloride	ND		UJ	13
Chloroethane	ND		UJ	13
Methylene Chloride	ND		UJ	12
1,1-Dichloroethene	ND		UJ	6.6
1,1-Dichloroethane	ND		UJ	6.6
Total-1,2-Dichloroethene	ND		UJ	6.6
Chloroform	ND		UJ	6.6
1,2-Dichloroethane	ND		UJ	6.6
1,1,1-Trichloroethane	ND		UJ	6.6
Carbon Tetrachloride	ND		UJ	6.6
Bromodichloromethane	ND		UJ	6.6
1,2-Dichloropropane	ND		UJ	6.6
trans-1,3-Dichloropropene	ND		UJ	6.6
Trichloroethene	ND		UJ	6.6
Dibromochloromethane	ND		UJ	6.6
1,1,2-Trichloroethane	ND		UJ	6.6
Benzene	ND		UJ	6.6
cis-1,3-Dichloropropene	ND		UJ	6.6
2-Chloroethylvinyl Ether	ND		UJ	13
Bromoform	ND		UJ	6.6
Tetrachloroethene	ND		UJ	6.6
1,1,2,2-Tetrachloroethane	ND		UJ	6.6
Toluene	ND		UJ	6.6
Chlorobenzene	ND		UJ	6.6
Ethylbenzene	ND		UJ	6.6
Acetone	ND		UJ	18
Carbon Disulfide		2.8	J	6.6
2-Butanone	ND		UJ	13
Vinyl Acetate	ND		UJ	13
2-Hexanone	ND		UJ	13
Styrene	ND		UJ	6.6
Total Xylenes	ND		UJ	6.6
4-Methyl-2-Pentanone	ND		UJ	13

037

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1/21/92

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	UJ	45
Bromomethane	ND	UJ	45
Vinyl Chloride	ND	UJ	45
Chloroethane	ND	UJ	45
Methylene Chloride	ND	UJ	54
1,1-Dichloroethene	ND	UJ	23
1,1-Dichloroethane	ND	UJ	23
Total-1,2-Dichloroethene	ND	UJ	23
Chloroform	ND	UJ	23
1,2-Dichloroethane	ND	UJ	23
1,1,1-Trichloroethane	ND	UJ	23
Carbon Tetrachloride	ND	UJ	23
Bromodichloromethane	ND	UJ	23
1,2-Dichloropropane	ND	UJ	23
trans-1,3-Dichloropropene	ND	UJ	23
Trichloroethene	ND	UJ	23
Dibromochloromethane	ND	UJ	23
1,1,2-Trichloroethane	ND	UJ	23
Benzene	ND	UJ	23
cis-1,3-Dichloropropene	ND	UJ	23
2-Chloroethylvinyl Ether	ND	UJ	45
Bromoform	ND	UJ	23
Tetrachloroethene	ND	UR	23
1,1,2,2-Tetrachloroethane	ND	UR	23
Toluene	9.2	J	23
Chlorobenzene	ND	UR	23
Ethylbenzene	ND	UR	23
Acetone	390	J	45
Carbon Disulfide	54	J	23
2-Butanone	95	J	45
Vinyl Acetate	ND	UJ	45
2-Hexanone	ND	UR	45
Styrene	ND	UR	23
Total Xylenes	ND	UR	23
4-Methyl-2-Pentanone	ND	UR	45

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18904 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	UR	12
Bromomethane	ND	UR	12
Vinyl Chloride	ND	UR	12
Chloroethane	ND	UR	12
Methylene Chloride	ND	UJ	30
1,1-Dichloroethene	ND	UR	6.2
1,1-Dichloroethane	ND	UR	6.2
Total-1,2-Dichloroethene	ND	UR	6.2
Chloroform	ND	UR	6.2
1,2-Dichloroethane	ND	UR	6.2
1,1,1-Trichloroethane	ND	UR	6.2
Carbon Tetrachloride	ND	UR	6.2
Bromodichloromethane	ND	UR	6.2
1,2-Dichloropropane	ND	UR	6.2
trans-1,3-Dichloropropene	ND	UR	6.2
Trichloroethene	ND	UR	6.2
Dibromochloromethane	ND	UR	6.2
1,1,2-Trichloroethane	ND	UR	6.2
Benzene	ND	UR	6.2
cis-1,3-Dichloropropene	ND	UR	6.2
2-Chloroethylvinyl Ether	ND	UR	12
Bromoform	ND	UR	6.2
Tetrachloroethene	ND	UR	6.2
1,1,2,2-Tetrachloroethane	ND	UR	6.2
Toluene	32	J	6.2
Chlorobenzene	ND	UR	6.2
Ethylbenzene	ND	UR	6.2
Acetone	ND	UJ	16
Carbon Disulfide	ND	UR	6.2
2-Butanone	ND	UR	12
Vinyl Acetate	ND	UR	12
2-Hexanone	ND	UR	12
Styrene	ND	UR	6.2
Total Xylenes	ND	UR	6.2
4-Methyl-2-Pentanone	ND	UR	12

059

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11/21/91

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18905 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	UR	11
Bromomethane	ND	UR	11
Vinyl Chloride	ND	UR	11
Chloroethane	ND	UR	11
Methylene Chloride	ND	UJ	29
1,1-Dichloroethene	ND	UR	5.6
1,1-Dichloroethane	ND	UR	5.6
Total-1,2-Dichloroethene	ND	UR	5.6
Chloroform	ND	UR	5.6
1,2-Dichloroethane	ND	UR	5.6
1,1,1-Trichloroethane	ND	UR	5.6
Carbon Tetrachloride	ND	UR	5.6
Bromodichloromethane	ND	UR	5.6
1,2-Dichloropropane	ND	UR	5.6
trans-1,3-Dichloropropene	ND	UR	5.6
Trichloroethene	ND	UR	5.6
Dibromochloromethane	ND	UR	5.6
1,1,2-Trichloroethane	ND	UR	5.6
Benzene	ND	UR	5.6
cis-1,3-Dichloropropene	ND	UR	5.6
2-Chloroethylvinyl Ether	ND	UR	11
Bromoform	ND	UR	5.6
Tetrachloroethene	ND	UR	5.6
1,1,2,2-Tetrachloroethane	ND	UR	5.6
Toluene	28	J	5.6
Chlorobenzene	ND	UR	5.6
Ethylbenzene	ND	UR	5.6
Acetone	ND	UR	11
Carbon Disulfide	ND	UR	5.6
2-Butanone	ND	UR	11
Vinyl Acetate	ND	UR	11
2-Hexanone	ND	UR	11
Styrene	ND	UR	5.6
Total Xylenes	ND	UR	5.6
4-Methyl-2-Pentanone	ND	UR	11

071

11/21/91

TEST CODE :SPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
TEST NAME : PURGEABLES - SOIL UNITS : UG/KG
SAMPLE ID LAB : EE-91-18906 RA MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	UJ	12
Bromomethane	ND	UJ	12
Vinyl Chloride	ND	UJ	12
Chloroethane	ND	UJ	12
Methylene Chloride	ND	UJ	9.6
1,1-Dichloroethene	ND	UJ	6.0
1,1-Dichloroethane	ND	UJ	6.0
Total-1,2-Dichloroethene	ND	UJ	6.0
Chloroform	ND	UJ	6.0
1,2-Dichloroethane	ND	UJ	6.0
1,1,1-Trichloroethane	ND	UJ	6.0
Carbon Tetrachloride	ND	UJ	6.0
Bromodichloromethane	ND	UJ	6.0
1,2-Dichloropropane	ND	UJ	6.0
trans-1,3-Dichloropropene	ND	UJ	6.0
Trichloroethene	ND	UJ	6.0
Dibromochloromethane	ND	UJ	6.0
1,1,2-Trichloroethane	ND	UJ	6.0
Benzene	ND	UJ	6.0
cis-1,3-Dichloropropene	ND	UJ	6.0
2-Chloroethylvinyl Ether	ND	UJ	12
Bromoform	ND	UJ	6.0
Tetrachloroethene	ND	UJ	6.0
1,1,2,2-Tetrachloroethane	ND	UJ	6.0
Toluene	2.4	J	6.0
Chlorobenzene	ND	UJ	6.0
Ethylbenzene	ND	UJ	6.0
Acetone	ND	UJ	8.0
Carbon Disulfide	ND	UJ	6.0
2-Butanone	ND	UJ	12
Vinyl Acetate	ND	UJ	12
2-Hexanone	ND	UJ	12
Styrene	ND	UJ	6.0
Total Xylenes	ND	UJ	6.0
4-Methyl-2-Pentanone	ND	UJ	12

087

11/21/91

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18900 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	UJ	3800
1,3-Dichlorobenzene	ND	UJ	3800
1,4-Dichlorobenzene	ND	UJ	3800
1,2-Dichlorobenzene	ND	UJ	3800
Bis(2-Chloroisopropyl)Ether	ND	UJ	3800
N-Nitrosodipropylamine	ND	UJ	3800
Hexachloroethane	ND	UJ	3800
Nitrobenzene	ND	UJ	3800
Isophorone	ND	UJ	3800
Bis(2-Chloroethoxy)Methane	ND	UJ	3800
1,2,4-Trichlorobenzene	ND	UJ	3800
Naphthalene	ND	UJ	3800
Hexachlorobutadiene	ND	UJ	3800
Hexachlorocyclopentadiene	ND	UJ	3800
2-Chloronaphthalene	ND	UJ	3800
Dimethyl Phthalate	ND	UJ	3800
Acenaphthylene	ND	UJ	3800
Fluorene	ND	UJ	3800
Acenaphthene	ND	UJ	3800
2,4-Dinitrotoluene	ND	UJ	3800
2,6-Dinitrotoluene	ND	UJ	3800
Diethylphthalate	ND	UJ	3800
4-Chlorophenyl Phenyl Ether	ND	UJ	3800
N-Nitrosodiphenylamine	ND	UJ	3800
4-Bromophenyl Phenyl Ether	ND	UJ	3800
Hexachlorobenzene	ND	UJ	3800
Phenanthrene	ND	UJ	3800
Anthracene	ND	UJ	3800
Di-N-Butyl Phthalate	42	J	3800
Fluoranthene	51	J	3800
Pyrene	77	J	3800
Butyl Benzyl Phthalate	ND	UJ	3800
3,3'-Dichlorobenzidine	ND	UJ	7600
Benzo(A)Anthracene	ND	UJ	3800
Bis(2-Ethylhexyl)Phthalate	ND	UJ	340
Chrysene	ND	UJ	3800

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18900 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	UJ	3800
Benzo(B)Fluoranthene	ND	UJ	3800
Benzo(K)Fluoranthene	ND	UJ	3800
Benzo(A)Pyrene	ND	UJ	3800
Indeno(1,2,3-cd)Pyrene	ND	UJ	3800
Dibenzo(A,H)Anthracene	ND	UJ	3800
Benzo(G,H,I)Perylene	ND	UJ	3800
Benzyl Alcohol	ND	UJ	3800
4-Chloroaniline	ND	UJ	3800
2-Methylnaphthalene	ND	UJ	3800
2-Nitroaniline	ND	UJ	18000
3-Nitroaniline	ND	UJ	18000
Dibenzofuran	ND	UJ	3800
4-Nitroaniline	ND	UJ	18000

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TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 91.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18901 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	UJ	3600
1,3-Dichlorobenzene	ND	UJ	3600
1,4-Dichlorobenzene	ND	UJ	3600
1,2-Dichlorobenzene	ND	UJ	3600
Bis(2-Chloroisopropyl)Ether	ND	UJ	3600
N-Nitrosodipropylamine	ND	UJ	3600
Hexachloroethane	ND	UJ	3600
Nitrobenzene	ND	UJ	3600
Isophorone	ND	UJ	3600
Bis(2-Chloroethoxy)Methane	ND	UJ	3600
1,2,4-Trichlorobenzene	ND	UJ	3600
Naphthalene	ND	UJ	3600
Hexachlorobutadiene	ND	UJ	3600
Hexachlorocyclopentadiene	ND	UJ	3600
2-Chloronaphthalene	ND	UJ	3600
Dimethyl Phthalate	ND	UJ	3600
Acenaphthylene	ND	UJ	3600
Fluorene	ND	UJ	3600
Acenaphthene	ND	UJ	3600
2,4-Dinitrotoluene	ND	UJ	3600
2,6-Dinitrotoluene	ND	UJ	3600
Diethylphthalate	ND	UJ	3600
4-Chlorophenyl Phenyl Ether	ND	UJ	3600
N-Nitrosodiphenylamine	ND	UJ	3600
4-Bromophenyl Phenyl Ether	ND	UJ	3600
Hexachlorobenzene	ND	UJ	3600
Phenanthrene	ND	UJ	3600
Anthracene	ND	UJ	3600
Di-N-Butyl Phthalate	55	J	3600
Fluoranthene	ND	UJ	3600
Pyrene	72	J	3600
Butyl Benzyl Phthalate	ND	UJ	3600
3,3'-Dichlorobenzidine	ND	UJ	7200
Benzo(A)Anthracene	ND	UJ	3600
Bis(2-Ethylhexyl)Phthalate	ND	UJ	250
Chrysene	ND	UJ	3600

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 91.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18901 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	UJ	3600
Benzo(B)Fluoranthene	ND	UJ	3600
Benzo(K)Fluoranthene	ND	UJ	3600
Benzo(A)Pyrene	ND	UJ	3600
Indeno(1,2,3-cd)Pyrene	ND	UJ	3600
Dibenzo(A,H)Anthracene	ND	UJ	3600
Benzo(G,H,I)Perylene	ND	UJ	3600
Benzyl Alcohol	ND	UJ	3600
4-Chloroaniline	ND	UJ	3600
2-Methylnaphthalene	210	J	3600
2-Nitroaniline	ND	UJ	18000
3-Nitroaniline	ND	UJ	18000
Dibenzofuran	ND	UJ	3600
4-Nitroaniline	ND	UJ	18000

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TEST CODE :SBN 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-19149 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	UJ	1800
1,3-Dichlorobenzene	ND	UJ	1800
1,4-Dichlorobenzene	ND	UJ	1800
1,2-Dichlorobenzene	ND	UJ	1800
Bis(2-Chloroisopropyl)Ether	ND	UJ	1800
N-Nitrosodipropylamine	ND	UJ	1800
Hexachloroethane	ND	UJ	1800
Nitrobenzene	ND	UJ	1800
Isophorone	ND	UJ	1800
Bis(2-Chloroethoxy)Methane	ND	UJ	1800
1,2,4-Trichlorobenzene	ND	UJ	1800
Naphthalene	ND	UJ	1800
Hexachlorobutadiene	ND	UJ	1800
Hexachlorocyclopentadiene	ND	UJ	1800
2-Chloronaphthalene	ND	UJ	1800
Dimethyl Phthalate	ND	UJ	1800
Acenaphthylene	ND	UJ	1800
Fluorene	ND	UJ	1800
Acenaphthene	ND	UJ	1800
2,4-Dinitrotoluene	ND	UJ	1800
2,6-Dinitrotoluene	ND	UJ	1800
Diethylphthalate	ND	UJ	1800
4-Chlorophenyl Phenyl Ether	ND	UJ	1800
N-Nitrosodiphenylamine	ND	UJ	1800
4-Bromophenyl Phenyl Ether	ND	UJ	1800
Hexachlorobenzene	ND	UJ	1800
Phenanthrene	71	J	1800
Anthracene	ND	UJ	1800
Di-N-Butyl Phthalate	ND	UJ	1800
Fluoranthene	130	J	1800
Pyrene	97	J	1800
Butyl Benzyl Phthalate	ND	UJ	1800
3,3'-Dichlorobenzidine	ND	UJ	3600
Benzo(A)Anthracene	ND	UJ	1800
Bis(2-Ethylhexyl)Phthalate	ND	UJ	124
Chrysene	96	J	1800

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TEST CODE :SBN 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-19149 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	UJ	1800
Benzo(B)Fluoranthene	ND	UJ	1800
Benzo(K)Fluoranthene	48	J	1800
Benzo(A)Pyrene	ND	UJ	1800
Indeno(1,2,3-cd)Pyrene	ND	UJ	1800
Dibenzo(A,H)Anthracene	ND	UJ	1800
Benzo(G,H,I)Perylene	ND	UJ	1800
Benzyl Alcohol	ND	UJ	1800
4-Chloroaniline	ND	UJ	1800
2-Methylnaphthalene	ND	UJ	1800
2-Nitroaniline	ND	UJ	8800
3-Nitroaniline	ND	UJ	8800
Dibenzofuran	ND	UJ	1800
4-Nitroaniline	ND	UJ	8800

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11/21/91

TEST CODE :SBN 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 59.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-19150 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	UJ	2200
1,3-Dichlorobenzene	ND	UJ	2200
1,4-Dichlorobenzene	ND	UJ	2200
1,2-Dichlorobenzene	ND	UJ	2200
Bis(2-Chloroisopropyl)Ether	ND	UJ	2200
N-Nitrosodipropylamine	ND	UJ	2200
Hexachloroethane	ND	UJ	2200
Nitrobenzene	ND	UJ	2200
Isophorone	ND	UJ	2200
Bis(2-Chloroethoxy)Methane	ND	UJ	2200
1,2,4-Trichlorobenzene	ND	UJ	2200
Naphthalene	ND	UJ	2200
Hexachlorobutadiene	ND	UJ	2200
Hexachlorocyclopentadiene	ND	UJ	2200
2-Chloronaphthalene	ND	UJ	2200
Dimethyl Phthalate	ND	UJ	2200
Acenaphthylene	ND	UJ	2200
Fluorene	ND	UJ	2200
Acenaphthene	ND	UJ	2200
2,4-Dinitrotoluene	ND	UJ	2200
2,6-Dinitrotoluene	ND	UJ	2200
Diethylphthalate	ND	UJ	2200
4-Chlorophenyl Phenyl Ether	ND	UJ	2200
N-Nitrosodiphenylamine	ND	UJ	2200
4-Bromophenyl Phenyl Ether	ND	UJ	2200
Hexachlorobenzene	ND	UJ	2200
Phenanthrene	ND	UJ	2200
Anthracene	ND	UJ	2200
Di-N-Butyl Phthalate	ND	UJ	2200
Fluoranthene	ND	UJ	2200
Pyrene	ND	UJ	2200
Butyl Benzyl Phthalate	ND	UJ	2200
3,3'-Dichlorobenzidine	ND	UJ	4400
Benzo(A)Anthracene	ND	UJ	2200
Bis(2-Ethylhexyl)Phthalate	ND	UJ	240
Chrysene	ND	UJ	2200

TEST CODE :SBN 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 59.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-19150 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	UJ	2200
Benzo(B)Fluoranthene	ND	UJ	2200
Benzo(K)Fluoranthene	ND	UJ	2200
Benzo(A)Pyrene	ND	UJ	2200
Indeno(1,2,3-cd)Pyrene	ND	UJ	2200
Dibenzo(A,H)Anthracene	ND	UJ	2200
Benzo(G,H,I)Perylene	ND	UJ	2200
Benzyl Alcohol	ND	UJ	2200
4-Chloroaniline	ND	UJ	2200
2-Methylnaphthalene	ND	UJ	2200
2-Nitroaniline	ND	UJ	10800
3-Nitroaniline	ND	UJ	10800
Dibenzofuran	ND	UJ	2200
4-Nitroaniline	ND	UJ	10800

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TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18902 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	U	4300
1,3-Dichlorobenzene	ND	U	4300
1,4-Dichlorobenzene	ND	U	4300
1,2-Dichlorobenzene	ND	U	4300
Bis(2-Chloroisopropyl)Ether	ND	U	4300
N-Nitrosodipropylamine	ND	U	4300
Hexachloroethane	ND	U	4300
Nitrobenzene	ND	U	4300
Isophorone	ND	U	4300
Bis(2-Chloroethoxy)Methane	ND	U	4300
1,2,4-Trichlorobenzene	ND	U	4300
Naphthalene	ND	U	4300
Hexachlorobutadiene	ND	U	4300
Hexachlorocyclopentadiene	ND	U	4300
2-Chloronaphthalene	ND	U	4300
Dimethyl Phthalate	ND	U	4300
Acenaphthylene	ND	U	4300
Fluorene	ND	U	4300
Acenaphthene	ND	U	4300
2,4-Dinitrotoluene	ND	U	4300
2,6-Dinitrotoluene	ND	U	4300
Diethylphthalate	ND	U	4300
4-Chlorophenyl Phenyl Ether	ND	U	4300
N-Nitrosodiphenylamine	ND	U	4300
4-Bromophenyl Phenyl Ether	ND	U	4300
Hexachlorobenzene	ND	U	4300
Phenanthrene	320	J	4300
Anthracene	ND	U	4300
Di-N-Butyl Phthalate	75	J	4300
Fluoranthene	430	J	4300
Pyrene	300	J	4300
Butyl Benzyl Phthalate	ND	U	4300
3,3'-Dichlorobenzidine	ND	U	8600
Benzo(A)Anthracene	ND	U	4300
Bis(2-Ethylhexyl)Phthalate	ND	UJ	210
Chrysene	ND	U	4300

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18902 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	U	4300
Benzo(B)Fluoranthene	80	J	4300
Benzo(K)Fluoranthene	ND	U	4300
Benzo(A)Pyrene	ND	U	4300
Indeno(1,2,3-cd)Pyrene	ND	U	4300
Dibenzo(A,H)Anthracene	ND	U	4300
Benzo(G,H,I)Perylene	ND	U	4300
Benzyl Alcohol	ND	U	4300
4-Chloroaniline	ND	U	4300
2-Methylnaphthalene	ND	U	4300
2-Nitroaniline	ND	U	21000
3-Nitroaniline	ND	U	21000
Dibenzofuran	ND	U	4300
4-Nitroaniline	ND	U	21000

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TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	U	15000
1,3-Dichlorobenzene	ND	U	15000
1,4-Dichlorobenzene	ND	U	15000
1,2-Dichlorobenzene	ND	U	15000
Bis(2-Chloroisopropyl)Ether	ND	U	15000
N-Nitrosodipropylamine	ND	U	15000
Hexachloroethane	ND	U	15000
Nitrobenzene	ND	U	15000
Isophorone	ND	U	15000
Bis(2-Chloroethoxy)Methane	ND	U	15000
1,2,4-Trichlorobenzene	ND	U	15000
Naphthalene	ND	U	15000
Hexachlorobutadiene	ND	U	15000
Hexachlorocyclopentadiene	ND	U	15000
2-Chloronaphthalene	ND	U	15000
Dimethyl Phthalate	ND	U	15000
Acenaphthylene	ND	U	15000
Fluorene	ND	U	15000
Acenaphthene	ND	U	15000
2,4-Dinitrotoluene	ND	U	15000
2,6-Dinitrotoluene	ND	U	15000
Diethylphthalate	ND	U	15000
4-Chlorophenyl Phenyl Ether	ND	U	15000
N-Nitrosodiphenylamine	ND	U	15000
4-Bromophenyl Phenyl Ether	ND	U	15000
Hexachlorobenzene	ND	U	15000
Phenanthrene	ND	U	15000
Anthracene	ND	U	15000
Di-N-Butyl Phthalate	ND	U	15000
Fluoranthene	ND	U	15000
Pyrene	ND	U	15000
Butyl Benzyl Phthalate	ND	U	15000
3,3'-Dichlorobenzidine	ND	U	30000
Benzo(A)Anthracene	ND	U	15000
Bis(2-Ethylhexyl)Phthalate	ND	UJ	310
Chrysene	ND	U	15000

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	U	15000
Benzo(B)Fluoranthene	ND	U	15000
Benzo(K)Fluoranthene	ND	U	15000
Benzo(A)Pyrene	ND	U	15000
Indeno(1,2,3-cd)Pyrene	ND	U	15000
Dibenzo(A,H)Anthracene	ND	U	15000
Benzo(G,H,I)Perylene	ND	U	15000
Benzyl Alcohol	ND	U	15000
4-Chloroaniline	ND	U	15000
2-Methylnaphthalene	ND	U	15000
2-Nitroaniline	ND	U	73000
3-Nitroaniline	ND	U	73000
Dibenzofuran	ND	U	15000
4-Nitroaniline	ND	U	73000

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292

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18904 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	U	4100
1,3-Dichlorobenzene	ND	U	4100
1,4-Dichlorobenzene	ND	U	4100
1,2-Dichlorobenzene	ND	U	4100
Bis(2-Chloroisopropyl)Ether	ND	U	4100
N-Nitrosodipropylamine	ND	U	4100
Hexachloroethane	ND	U	4100
Nitrobenzene	ND	U	4100
Isophorone	ND	U	4100
Bis(2-Chloroethoxy)Methane	ND	U	4100
1,2,4-Trichlorobenzene	ND	U	4100
Naphthalene	ND	U	4100
Hexachlorobutadiene	ND	U	4100
Hexachlorocyclopentadiene	ND	U	4100
2-Chloronaphthalene	ND	U	4100
Dimethyl Phthalate	ND	U	4100
Acenaphthylene	ND	U	4100
Fluorene	ND	U	4100
Acenaphthene	ND	U	4100
2,4-Dinitrotoluene	ND	U	4100
2,6-Dinitrotoluene	ND	U	4100
Diethylphthalate	ND	U	4100
4-Chlorophenyl Phenyl Ether	ND	U	4100
N-Nitrosodiphenylamine	ND	U	4100
4-Bromophenyl Phenyl Ether	ND	U	4100
Hexachlorobenzene	ND	U	4100
Phenanthrene	130	J	4100
Anthracene	ND	U	4100
Di-N-Butyl Phthalate	51	J	4100
Fluoranthene	210	J	4100
Pyrene	180	J	4100
Butyl Benzyl Phthalate	ND	U	4100
3,3'-Dichlorobenzidine	ND	U	8100
Benzo(A)Anthracene	ND	U	4100
Bis(2-Ethylhexyl)Phthalate	ND	UJ	130
Chrysene	88	J	4100

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18904 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	U	4100
Benzo(B)Fluoranthene	ND	U	4100
Benzo(K)Fluoranthene	ND	U	4100
Benzo(A)Pyrene	ND	U	4100
Indeno(1,2,3-cd)Pyrene	46	J	4100
Dibenzo(A,H)Anthracene	ND	U	4100
Benzo(G,H,I)Perylene	ND	U	4100
Benzyl Alcohol	ND	U	4100
4-Chloroaniline	ND	U	4100
2-Methylnaphthalene	ND	U	4100
2-Nitroaniline	ND	U	20000
3-Nitroaniline	ND	U	20000
Dibenzofuran	ND	U	4100
4-Nitroaniline	ND	U	20000

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TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18905 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	U	730
1,3-Dichlorobenzene	ND	U	730
1,4-Dichlorobenzene	ND	U	730
1,2-Dichlorobenzene	ND	U	730
Bis(2-Chloroisopropyl)Ether	ND	U	730
N-Nitrosodipropylamine	ND	U	730
Hexachloroethane	ND	U	730
Nitrobenzene	ND	U	730
Isophorone	ND	U	730
Bis(2-Chloroethoxy)Methane	ND	U	730
1,2,4-Trichlorobenzene	ND	U	730
Naphthalene	ND	U	730
Hexachlorobutadiene	ND	U	730
Hexachlorocyclopentadiene	ND	U	730
2-Chloronaphthalene	ND	U	730
Dimethyl Phthalate	ND	U	730
Acenaphthylene	ND	U	730
Fluorene	ND	U	730
Acenaphthene	ND	U	730
2,4-Dinitrotoluene	ND	U	730
2,6-Dinitrotoluene	ND	U	730
Diethylphthalate	ND	U	730
4-Chlorophenyl Phenyl Ether	ND	U	730
N-Nitrosodiphenylamine	ND	U	730
4-Bromophenyl Phenyl Ether	ND	U	730
Hexachlorobenzene	ND	U	730
Phenanthrene	220	J	730
Anthracene	ND	U	730
Di-N-Butyl Phthalate	41	J	730
Fluoranthene	260	J	730
Pyrene	220	J	730
Butyl Benzyl Phthalate	ND	U	730
3,3'-Dichlorobenzidine	ND	U	1500
Benzo(A)Anthracene	70	J	730
Bis(2-Ethylhexyl)Phthalate	ND	UJ	130
Chrysene	130	J	730

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307

TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18905 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	U	730
Benzo(B)Fluoranthene	70	J	730
Benzo(K)Fluoranthene	42	J	730
Benzo(A)Pyrene	44	J	730
Indeno(1,2,3-cd)Pyrene	ND	U	730
Dibenzo(A,H)Anthracene	ND	U	730
Benzo(G,H,I)Perylene	ND	U	730
Benzyl Alcohol	ND	U	730
4-Chloroaniline	ND	U	730
2-Methylnaphthalene	ND	U	730
2-Nitroaniline	ND	U	3600
3-Nitroaniline	ND	U	3600
Dibenzofuran	ND	U	730
4-Nitroaniline	ND	U	3600

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TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18906 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER	RESULTS	Q	QNT. LIMIT
Bis(2-Chloroethyl)Ether	ND	U	1600
1,3-Dichlorobenzene	ND	U	1600
1,4-Dichlorobenzene	ND	U	1600
1,2-Dichlorobenzene	ND	U	1600
Bis(2-Chloroisopropyl)Ether	ND	U	1600
N-Nitrosodipropylamine	ND	U	1600
Hexachloroethane	ND	U	1600
Nitrobenzene	ND	U	1600
Isophorone	ND	U	1600
Bis(2-Chloroethoxy)Methane	ND	U	1600
1,2,4-Trichlorobenzene	ND	U	1600
Naphthalene	ND	U	1600
Hexachlorobutadiene	ND	U	1600
Hexachlorocyclopentadiene	ND	U	1600
2-Chloronaphthalene	ND	U	1600
Dimethyl Phthalate	ND	U	1600
Acenaphthylene	ND	U	1600
Fluorene	ND	U	1600
Acenaphthene	ND	U	1600
2,4-Dinitrotoluene	ND	U	1600
2,6-Dinitrotoluene	ND	U	1600
Diethylphthalate	ND	U	1600
4-Chlorophenyl Phenyl Ether	ND	U	1600
N-Nitrosodiphenylamine	ND	U	1600
4-Bromophenyl Phenyl Ether	ND	U	1600
Hexachlorobenzene	ND	U	1600
Phenanthrene	ND	U	1600
Anthracene	ND	U	1600
Di-N-Butyl Phthalate	43	J	1600
Fluoranthene	57	J	1600
Pyrene	53	J	1600
Butyl Benzyl Phthalate	ND	U	1600
3,3'-Dichlorobenzidine	ND	U	3200
Benzo(A)Anthracene	ND	U	1600
Bis(2-Ethylhexyl)Phthalate	ND	U	160
Chrysene	ND	U	1600

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TEST CODE :SBN 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
TEST NAME : BASE NEUTRALS UNITS : UG/KG
SAMPLE ID LAB : EE-91-18906 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER	RESULTS	Q	QNT. LIMIT
Di-N-Octyl Phthalate	ND	U	1600
Benzo(B)Fluoranthene	ND	U	1600
Benzo(K)Fluoranthene	ND	U	1600
Benzo(A)Pyrene	ND	U	1600
Indeno(1,2,3-cd)Pyrene	ND	U	1600
Dibenzo(A,H)Anthracene	ND	U	1600
Benzo(G,H,I)Perylene	ND	U	1600
Benzyl Alcohol	ND	U	1600
4-Chloroaniline	ND	U	1600
2-Methylnaphthalene	ND	U	1600
2-Nitroaniline	ND	U	7700
3-Nitroaniline	ND	U	7700
Dibenzofuran	ND	U	1600
4-Nitroaniline	ND	U	7700

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324

TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18900 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	UJ	0.004
alpha-BHC	ND	UJ	0.004
beta-BHC	ND	UJ	0.004
gamma-BHC (Lindane)	ND	UJ	0.004
delta-BHC	ND	UJ	0.004
Chlordane	ND	UJ	0.036
4,4'-DDD	ND	UJ	0.009
4,4'-DDE	ND	UJ	0.009
4,4'-DDT	ND	UJ	0.023
Dieldrin	ND	UJ	0.009
Endosulfan I	ND	UJ	0.009
Endosulfan II	ND	UJ	0.009
Endosulfan Sulfate	ND	UJ	0.023
Endrin	ND	UJ	0.009
Endrin Aldehyde	ND	UJ	0.023
Heptachlor	ND	UJ	0.004
Heptachlor Epoxide	ND	UJ	0.004
PCB-1016	ND	UJ	0.091
PCB-1221	ND	UJ	0.091
PCB-1232	ND	UJ	0.091
PCB-1242	ND	UJ	0.091
PCB-1248	ND	UJ	0.091
PCB-1254	ND	UJ	0.091
PCB-1260	ND	UJ	0.091
Toxaphene	ND	UJ	0.23
Methoxychlor	ND	UJ	0.073

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TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 91.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18901 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	UJ	0.004
alpha-BHC	ND	UJ	0.004
beta-BHC	ND	UJ	0.004
gamma-BHC (Lindane)	ND	UJ	0.004
delta-BHC	ND	UJ	0.004
Chlordane	ND	UJ	0.035
4,4'-DDD	ND	UJ	0.009
4,4'-DDE	ND	UJ	0.009
4,4'-DDT	ND	UJ	0.022
Dieldrin	ND	UJ	0.009
Endosulfan I	ND	UJ	0.009
Endosulfan II	ND	UJ	0.009
Endosulfan Sulfate	ND	UJ	0.022
Endrin	ND	UJ	0.009
Endrin Aldehyde	ND	UJ	0.022
Heptachlor	ND	UJ	0.004
Heptachlor Epoxide	ND	UJ	0.004
PCB-1016	ND	UJ	0.088
PCB-1221	ND	UJ	0.088
PCB-1232	ND	UJ	0.088
PCB-1242	ND	UJ	0.088
PCB-1248	ND	UJ	0.088
PCB-1254	ND	UJ	0.088
PCB-1260	ND	UJ	0.088
Toxaphene	ND	UJ	0.22
Methoxychlor	ND	UJ	0.070

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466

TEST CODE :SP&PCB1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-19149 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	U	0.001
alpha-BHC	ND	U	0.001
beta-BHC	ND	U	0.001
gamma-BHC (Lindane)	ND	U	0.001
delta-BHC	ND	U	0.001
Chlordane	ND	U	0.011
4,4'-DDD	ND	U	0.002
4,4'-DDE	ND	U	0.002
4,4'-DDT	ND	U	0.006
Dieldrin	ND	U	0.002
Endosulfan I	ND	U	0.002
Endosulfan II	ND	U	0.002
Endosulfan Sulfate	ND	U	0.006
Endrin	ND	U	0.002
Endrin Aldehyde	ND	U	0.006
Heptachlor	ND	U	0.001
Heptachlor Epoxide	ND	U	0.001
PCB-1016	ND	U	0.027
PCB-1221	ND	U	0.027
PCB-1232	ND	U	0.027
PCB-1242	ND	U	0.027
PCB-1248	ND	U	0.027
PCB-1254	ND	U	0.027
PCB-1260	ND	U	0.027
Toxaphene	ND	U	0.068
Methoxychlor	ND	U	0.022

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TEST CODE :SP&PCB1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 59.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-19150 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	U	0.001
alpha-BHC	ND	U	0.001
beta-BHC	ND	U	0.001
gamma-BHC (Lindane)	ND	U	0.001
delta-BHC	ND	U	0.001
Chlordane	ND	U	0.014
4,4'-DDD	ND	U	0.003
4,4'-DDE	ND	U	0.003
4,4'-DDT	ND	U	0.008
Dieldrin	ND	U	0.003
Endosulfan I	ND	U	0.003
Endosulfan II	ND	U	0.003
Endosulfan Sulfate	ND	U	0.008
Endrin	ND	U	0.003
Endrin Aldehyde	ND	U	0.008
Heptachlor	ND	U	0.001
Heptachlor Epoxide	ND	U	0.001
PCB-1016	ND	U	0.034
PCB-1221	ND	U	0.034
PCB-1232	ND	U	0.034
PCB-1242	ND	U	0.034
PCB-1248	ND	U	0.034
PCB-1254	ND	U	0.034
PCB-1260	ND	U	0.034
Toxaphene	ND	U	0.085
Methoxychlor	ND	U	0.027

11/21/91

TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18902 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	U	0.013
alpha-BHC	ND	U	0.013
beta-BHC	ND	U	0.013
gamma-BHC (Lindane)	ND	U	0.013
delta-BHC	ND	U	0.013
Chlordane	ND	U	0.10
4,4'-DDD	ND	U	0.026
4,4'-DDE	ND	U	0.026
4,4'-DDT	ND	U	0.066
Dieldrin	ND	U	0.026
Endosulfan I	ND	U	0.026
Endosulfan II	ND	U	0.026
Endosulfan Sulfate	ND	U	0.066
Endrin	ND	U	0.026
Endrin Aldehyde	ND	U	0.066
Heptachlor	ND	U	0.013
Heptachlor Epoxide	ND	U	0.013
PCB-1016	ND	U	0.26
PCB-1221	ND	U	0.26
PCB-1232	ND	U	0.26
PCB-1242	ND	U	0.26
PCB-1248	ND	U	0.26
PCB-1254	ND	U	0.26
PCB-1260	ND	U	0.26
Toxaphene	ND	U	0.66
Methoxychlor	ND	U	0.21

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TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	u	0.023
alpha-BHC	ND	u	0.023
beta-BHC	ND	u	0.023
gamma-BHC (Lindane)	ND	u	0.023
delta-BHC	ND	u	0.023
Chlordane	ND	u	0.18
4,4'-DDD	ND	u	0.045
4,4'-DDE	ND	u	0.045
4,4'-DDT	ND	u	0.11
Dieldrin	ND	u	0.045
Endosulfan I	ND	u	0.045
Endosulfan II	ND	u	0.045
Endosulfan Sulfate	ND	u	0.11
Endrin	ND	u	0.045
Endrin Aldehyde	ND	u	0.11
Heptachlor	ND	u	0.023
Heptachlor Epoxide	ND	u	0.023
PCB-1016	ND	u	0.45
PCB-1221	ND	u	0.45
PCB-1232	ND	u	0.45
PCB-1242	ND	u	0.45
PCB-1248	ND	u	0.45
PCB-1254	ND	u	0.45
PCB-1260	ND	u	0.45
Toxaphene	ND	u	1.1
Methoxychlor	ND	u	0.36

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TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18904 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	U	0.001
alpha-BHC	ND	U	0.001
beta-BHC	ND	U	0.001
gamma-BHC (Lindane)	ND	U	0.001
delta-BHC	ND	U	0.001
Chlordane	ND	U	0.010
4,4'-DDD	ND	U	0.002
4,4'-DDE	ND	U	0.002
4,4'-DDT	ND	U	0.006
Dieldrin	ND	U	0.002
Endosulfan I	ND	U	0.002
Endosulfan II	ND	U	0.002
Endosulfan Sulfate	ND	U	0.006
Endrin	ND	U	0.002
Endrin Aldehyde	ND	U	0.006
Heptachlor	ND	U	0.001
Heptachlor Epoxide	ND	U	0.001
PCB-1016	ND	U	0.025
PCB-1221	ND	U	0.025
PCB-1232	ND	U	0.025
PCB-1242	ND	U	0.025
PCB-1248	ND	U	0.025
PCB-1254	0.020	J	0.025
PCB-1260	ND	U	0.025
Toxaphene	ND	U	0.062
Methoxychlor	ND	U	0.020

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TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18905 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	U	0.001
alpha-BHC	ND	U	0.001
beta-BHC	ND	U	0.001
gamma-BHC (Lindane)	ND	U	0.001
delta-BHC	ND	U	0.001
Chlordane	ND	U	0.009
4,4'-DDD	ND	U	0.002
4,4'-DDE	ND	U	0.002
4,4'-DDT	ND	U	0.005
Dieldrin	ND	U	0.002
Endosulfan I	ND	U	0.002
Endosulfan II	ND	U	0.002
Endosulfan Sulfate	ND	U	0.005
Endrin	ND	U	0.002
Endrin Aldehyde	ND	U	0.005
Heptachlor	ND	U	0.001
Heptachlor Epoxide	ND	U	0.001
PCB-1016	ND	U	0.022
PCB-1221	ND	U	0.022
PCB-1232	ND	U	0.022
PCB-1242	ND	U	0.022
PCB-1248	ND	U	0.022
PCB-1254	0.018	J	0.022
PCB-1260	ND	U	0.022
Toxaphene	ND	U	0.056
Methoxychlor	ND	U	0.018

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TEST CODE :SP&PCB1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
TEST NAME : PESTICIDE-PCB UNITS : MG/KG
SAMPLE ID LAB : EE-91-18906 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER	RESULTS	Q	QNT. LIMIT
Aldrin	ND	U	0.001
alpha-BHC	ND	U	0.001
beta-BHC	ND	U	0.001
gamma-BHC (Lindane)	ND	U	0.001
delta-BHC	ND	U	0.001
Chlordane	ND	U	0.010
4,4'-DDD	ND	U	0.002
4,4'-DDE	ND	U	0.002
4,4'-DDT	ND	U	0.006
Dieldrin	ND	U	0.002
Endosulfan I	ND	U	0.002
Endosulfan II	ND	U	0.002
Endosulfan Sulfate	ND	U	0.006
Endrin	ND	U	0.002
Endrin Aldehyde	ND	U	0.006
Heptachlor	ND	U	0.001
Heptachlor Epoxide	ND	U	0.001
PCB-1016	ND	U	0.024
PCB-1221	ND	U	0.024
PCB-1232	ND	U	0.024
PCB-1242	ND	U	0.024
PCB-1248	ND	U	0.024
PCB-1254	ND	U	0.024
PCB-1260	ND	U	0.024
Toxaphene	ND	U	0.060
Methoxychlor	ND	U	0.019

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TEST CODE :SOPHOS1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18900 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	5.7
Disulfoton	ND	U	1.1
Malathion	ND	U	1.1
Parathion	ND	U	1.1
Methyl Parathion	ND	U	1.1
Diazinon	ND	U	1.1
Methyl Azinphos	ND	U	1.1
Phorate	ND	U	1.1
Chlorpyrifos	ND	U	1.1
Dimethoate	ND	U	1.1
Mevinphos	ND	U	1.1
Ethion	ND	U	1.1

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636

TEST CODE :SOPHOS1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-19149 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	6.8
Disulfoton	ND	U	1.4
Malathion	ND	U	1.4
Parathion	ND	U	1.4
Methyl Parathion	ND	U	1.4
Diazinon	ND	U	1.4
Methyl Azinphos	ND	U	1.4
Phorate	ND	U	1.4
Chlorpyrifos	ND	U	1.4
Dimethoate	ND	U	1.4
Mevinphos	ND	U	1.4
Ethion	ND	U	1.4

11/21/91

TEST CODE :SOPHOS1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18902 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	6.6
Disulfoton	ND	U	1.3
Malathion	ND	U	1.3
Parathion	ND	U	1.3
Methyl Parathion	ND	U	1.3
Diazinon	ND	U	1.3
Methyl Azinphos	ND	U	1.3
Phorate	ND	U	1.3
Chlorpyrifos	ND	U	1.3
Dimethoate	ND	U	1.3
Mevinphos	ND	U	1.3
Ethion	ND	U	1.3

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TEST CODE :SOPHOS1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	23
Disulfoton	ND	U	4.5
Malathion	ND	U	4.5
Parathion	ND	U	4.5
Methyl Parathion	ND	U	4.5
Diazinon	ND	U	4.5
Methyl Azinphos	ND	U	4.5
Phorate	ND	U	4.5
Chlorpyrifos	ND	U	4.5
Dimethoate	ND	U	4.5
Mevinphos	ND	U	4.5
Ethion	ND	U	4.5

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TEST CODE :SOPHOS1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18904 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	6.2
Disulfoton	ND	U	1.2
Malathion	ND	U	1.2
Parathion	ND	U	1.2
Methyl Parathion	ND	U	1.2
Diazinon	ND	U	1.2
Methyl Azinphos	ND	U	1.2
Phorate	ND	U	1.2
Chlorpyrifos	ND	U	1.2
Dimethoate	ND	U	1.2
Mevinphos	ND	U	1.2
Ethion	ND	U	1.2

1/21/91

642

TEST CODE :SOPHOS1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18905 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	5.6
Disulfoton	ND	U	1.1
Malathion	ND	U	1.1
Parathion	ND	U	1.1
Methyl Parathion	ND	U	1.1
Diazinon	ND	U	1.1
Methyl Azinphos	ND	U	1.1
Phorate	ND	U	1.1
Chlorpyrifos	ND	U	1.1
Dimethoate	ND	U	1.1
Mevinphos	ND	U	1.1
Ethion	ND	U	1.1

11/21/91

TEST CODE :SOPHOS1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
TEST NAME : ORGANO-PHOS PEST. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18906 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER	RESULTS	Q	QNT. LIMIT
Naled	ND	U	6.0
Disulfoton	ND	U	1.2
Malathion	ND	U	1.2
Parathion	ND	U	1.2
Methyl Parathion	ND	U	1.2
Diazinon	ND	U	1.2
Methyl Azinphos	ND	U	1.2
Phorate	ND	U	1.2
Chlorpyrifos	ND	U	1.2
Dimethoate	ND	U	1.2
Mevinphos	ND	U	1.2
Ethion	ND	U	1.2

1/21/91

TEST CODE :SHERB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 88.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-18900 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-004

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	2.3
2,4,5-TP (Silvex)	ND	U	2.3
2,4,5 T	ND	U	2.3
2,4 DB	ND	U	2.7

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TEST CODE :SHERB 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 73.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-19149 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-006

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	1.4
2,4,5-TP (Silvex)	ND	U	1.4
2,4,5 T	ND	U	1.4
2,4 DB	ND	U	1.6

11/21/9.

TEST CODE :SHERB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 76.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-18902 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-015

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	1.3
2,4,5-TP (Silvex)	ND	U	1.3
2,4,5 T	ND	U	1.3
2,4 DB	ND	U	1.6

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759

TEST CODE :SHERB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 22.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	4.5
2,4,5-TP (Silvex)	ND	U	4.5
2,4,5 T	ND	U	4.5
2,4 DB	ND	U	5.4

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11/21/91

761

TEST CODE :SHERB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 81.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-18904 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-017

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	1.2
2,4,5-TP (Silvex)	ND	U	1.2
2,4,5 T	ND	U	1.2
2,4 DB	ND	U	1.5

11/21/91

TEST CODE :SHERB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 90.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-18905 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-018

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	1.1
2,4,5-TP (Silvex)	ND	U	1.1
2,4,5 T	ND	U	1.1
2,4 DB	ND	U	1.3

11/21/91

TEST CODE :SHERB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
RESULTS IN DRY WEIGHT %SOLIDS : 83.0 %
TEST NAME : HERBICIDES UNITS : MG/KG
SAMPLE ID LAB : EE-91-18906 MATRIX : SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-019

PARAMETER	RESULTS	Q	QNT. LIMIT
2,4-D	ND	U	1.2
2,4,5-TP (Silvex)	ND	U	1.2
2,4,5 T	ND	U	1.2
2,4 DB	ND	U	1.4

11/21/91

TEST CODE :SPPH 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PURG PET. HYDRO. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18901 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER	RESULTS	Q	QNT. LIMIT
Gasoline	13	NJ	5.0

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TEST CODE :SPPH 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PURG PET. HYDRO. UNITS : MG/KG
SAMPLE ID LAB : EE-91-19150 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER	RESULTS	Q	QNT. LIMIT
Gasoline	ND	u	5.0

11/21/91

TEST CODE :SPPH 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PURG PET. HYDRO. UNITS : MG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
Gasoline	31	NS	5.0

12/05/91

TEST CODE :SCTPH 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : TPH AS DIESEL UNITS : MG/KG
SAMPLE ID LAB : EE-91-18901 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-005

PARAMETER	RESULTS	Q	QNT. LIMIT
TPH as Diesel	ND	U	5.0

11/21/2.

TEST CODE :SCTPH 1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : TPH AS DIESEL UNITS : MG/KG
SAMPLE ID LAB : EE-91-19150 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-014

PARAMETER	RESULTS	Q	QNT. LIMIT
TPH as Diesel	ND	u	5.0

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TEST CODE :SCTPH 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : TPH AS DIESEL UNITS : MG/KG
SAMPLE ID LAB : EE-91-18903 MATRIX: SOLID
SAMPLE ID CLIENT: FAA-ANN-SV-016

PARAMETER	RESULTS	Q	QNT. LIMIT
TPH as Diesel	ND	u	5.0

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11/21/91

TEST CODE :SPETHY1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : TRPH UNITS : MG/KG
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-91-18901 FAA-ANN-SV-005	9.4		5.0
EE-91-18903 FAA-ANN-SV-016	ND	U	5.0

11/21/91

TEST CODE :SPETHY1 JOB NUMBER :9101.993

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : TRPH UNITS : MG/KG
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-91-19150 FAA-ANN-SV-014	20		5.0

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TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18914 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-002

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	5.0
PCB-1254	15		5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18915 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-003

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	5.0
PCB-1254	12	A	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18916 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-007

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	UJ	5.0
PCB-1254	ND	UJ	5.0
PCB-1221	ND	UJ	5.0
PCB-1232	ND	UJ	5.0
PCB-1248	ND	UJ	5.0
PCB-1260	ND	UJ	5.0
PCB-1016	ND	UJ	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18917 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-008

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	9.8	UJ	5.0
PCB-1254	24	UJ	5.0
PCB-1221	ND	UJ	5.0
PCB-1232	ND	UJ	5.0
PCB-1248	ND	UJ	5.0
PCB-1260	ND	UJ	5.0
PCB-1016	ND	UJ	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18918 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-009

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	10		5.0
PCB-1254	25		5.0
PCB-1221	ND		5.0
PCB-1232	ND		5.0
PCB-1248	ND		5.0
PCB-1260	ND		5.0
PCB-1016	ND		5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18919 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-010

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	7.9	U	5.0
PCB-1254	23	U	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0

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11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18920 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-011

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	9.0	UJ	5.0
PCB-1254	26	UJ	5.0
PCB-1221	ND	UJ	5.0
PCB-1232	ND	UJ	5.0
PCB-1248	ND	UJ	5.0
PCB-1260	ND	UJ	5.0
PCB-1016	ND	UJ	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18921 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-012

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	7.6	J	5.0
PCB-1254	26	J	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18922 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-013

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	110	J	25
PCB-1254	230	J	25
PCB-1221	ND	UJ	25
PCB-1232	ND	UJ	25
PCB-1248	ND	UJ	25
PCB-1260	ND	UJ	25
PCB-1016	ND	UJ	25

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18923 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-020

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	5.0
PCB-1254	ND	U	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0

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TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18924 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-021

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	u	5.0
PCB-1254	ND	u	5.0
PCB-1221	ND	u	5.0
PCB-1232	ND	u	5.0
PCB-1248	ND	u	5.0
PCB-1260	ND	u	5.0
PCB-1016	ND	u	5.0

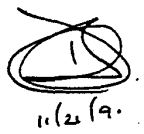
11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18925 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-022

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	5.0
PCB-1254	ND	U	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0



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TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18926 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-023

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	5.0
PCB-1254	ND	U	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	ND	U	5.0
PCB-1016	ND	U	5.0

10/2/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18927 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-024

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	10000
PCB-1254	ND	U	10000
PCB-1221	ND	U	10000
PCB-1232	ND	U	10000
PCB-1248	ND	U	10000
PCB-1260	100000		10000
PCB-1016	ND	U	10000

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18928 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-025

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	UJ	5000
PCB-1254	ND	UJ	5000
PCB-1221	ND	UJ	5000
PCB-1232	ND	UJ	5000
PCB-1248	ND	UJ	5000
PCB-1260	59000	J	5000
PCB-1016	ND	UJ	5000

10/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18929 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-026

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	UJ	7500
PCB-1254	ND	UJ	7500
PCB-1221	ND	UJ	7500
PCB-1232	ND	UJ	7500
PCB-1248	ND	UJ	7500
PCB-1260	62000	J	7500
PCB-1016	ND	UJ	7500

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18930 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-027

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	UJ	5.0
PCB-1254	ND	UJ	5.0
PCB-1221	ND	UJ	5.0
PCB-1232	ND	UJ	5.0
PCB-1248	ND	UJ	5.0
PCB-1260	ND	UJ	5.0
PCB-1016	ND	UJ	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18931 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-028

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	U	5.0
PCB-1254	ND	U	5.0
PCB-1221	ND	U	5.0
PCB-1232	ND	U	5.0
PCB-1248	ND	U	5.0
PCB-1260	9.3		5.0
PCB-1016	ND	U	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18932 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-029

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	UJ	5.0
PCB-1254	ND	UJ	5.0
PCB-1221	ND	UJ	5.0
PCB-1232	ND	UJ	5.0
PCB-1248	ND	UJ	5.0
PCB-1260	ND	UJ	5.0
PCB-1016	ND	UJ	5.0

11/21/91

TEST CODE :LPCB 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PCB IN LIQUID UNITS : MG/KG
SAMPLE ID LAB : EE-91-18933 MATRIX: LIQUID
SAMPLE ID CLIENT: FAA-ANN-SV-030

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND	UJ	5.0
PCB-1254	ND	UJ	5.0
PCB-1221	ND	UJ	5.0
PCB-1232	ND	UJ	5.0
PCB-1248	ND	UJ	5.0
PCB-1260	ND	UJ	5.0
PCB-1016	ND	UJ	5.0

TEST CODE :WPURG 1 JOB NUMBER :9101.975

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PURGEABLES UNITS : UG/L
SAMPLE ID LAB : EE-91-18907 MATRIX: WATER
SAMPLE ID CLIENT: FAA-ANN-SV-031

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND	u	10
Bromomethane	ND	u	10
Vinyl Chloride	ND	u	10
Chloroethane	ND	u	10
Methylene Chloride	ND	u	18
1,1-Dichloroethene	ND	u	5.0
1,1-Dichloroethane	ND	u	5.0
Total-1,2-Dichloroethene	ND	u	5.0
Chloroform	ND	u	5.0
1,2-Dichloroethane	ND	u	5.0
1,1,1-Trichloroethane	ND	u	5.0
Carbon Tetrachloride	ND	u	5.0
Bromodichloromethane	ND	u	5.0
1,2-Dichloropropane	ND	u	5.0
trans-1,3-Dichloropropene	ND	u	5.0
Trichloroethene	ND	u	5.0
Chlorodibromomethane	ND	u	5.0
1,1,2-Trichloroethane	ND	u	5.0
Benzene	ND	u	5.0
cis-1,3-Dichloropropene	ND	u	5.0
2-Chloroethylvinyl Ether	ND	u	10
Bromoform	ND	u	5.0
Tetrachloroethene	ND	u	5.0
1,1,2,2-Tetrachloroethane	ND	u	5.0
Toluene	ND	u	5.0
Chlorobenzene	ND	u	5.0
Ethylbenzene	ND	u	5.0
Acetone	ND	u	10
Carbon Disulfide	6.0		5.0
2-Butanone	ND	u	10
Vinyl Acetate	ND	u	10
4-Methyl-2-Pentanone	ND	u	10
2-Hexanone	ND	u	10
Styrene	ND	u	5.0
Total Xylenes	ND	u	5.0

1

093

JOB NUMBER :9101.875

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
SAMPLE ID LAB :EE-91-17742 MATRIX: WATER
SAMPLE ID CLIENT: FAA-ANN-SV-001

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Petroleum Hydrocarbons	ND	U5	1.0	MG/L

1
11/05/91

TEST CODE :WCTPH 1 JOB NUMBER :9101.875

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : TPH AS DIESEL UNITS : UG/L
SAMPLE ID LAB : EE-91-17742 MATRIX: WATER
SAMPLE ID CLIENT: FAA-ANN-SV-001

PARAMETER	RESULTS	Q	QNT. LIMIT
TPH as Diesel	ND	U	100

TEST CODE :WPPH 1 JOB NUMBER :9101.875

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : FE-6000 FAA PA/SI
TEST NAME : PURG PET. HYDRO. UNITS : UG/L
SAMPLE ID LAB : EE-91-17742 MATRIX: WATER
SAMPLE ID CLIENT: FAA-ANN-SV-001

PARAMETER	RESULTS	Q	QNT. LIMIT
Gasoline	ND	u	100

1
11/21/91

SUMMARY OF DATA QUALITY ASSURANCE REVIEW

CLIENT: Federal Aviation Administration

SITE: Annette Island FAA Facility

DATA REVIEWER: Andrew Riddell DATE OF REVIEW: December 10, 1991

Sample Matrix: Three soil samples and one hexane rinsate

Sample Nos.: FAA-ANN-SV-016, FAA-ANN-SV-017, FAA-ANN-SV-018, FAA-ANN-SV-032

The analytical data provided by Twin City Testing Corporation (TCT), of St. Paul, Minnesota on October 8, 1991 was reviewed for precision, accuracy, and completeness. All data was deemed acceptable as reported, with the following qualifications.

Three soil samples and one hexane rinsate were collected for the following analyses: polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). The hexane rinsate was not analyzed due to inadequate sample volume; the sample container was not sealed properly when it arrived at the laboratory.

The data were reviewed in accordance with Quality Control (QC) specifications outlined in the Ecology and Environment, Inc. (E & E) Generic Work Plan for FAA Alaska Region Task No. 4, and the January 1990 USEPA Statement of Work for PCDD/PCDF Analysis (SW-846 Method 8290).

1.0 HOLDING TIMES

No holding time criteria have been established for PCDD/PCDF analysis. The samples were extracted within 23 days of collection and analyzed within 32 days of extraction.

2.0 INITIAL AND ROUTINE CALIBRATION

Initial and routine calibration solutions contain known concentrations of compounds being analyzed for and are checked before and during a sample batch run. Inability of a laboratory to perform acceptably on calibration criteria may indicate that problems exist in the analytical system. Sample data generated under such conditions should be considered suspect.

REVIEW RESULTS:

All criteria for initial and routine calibrations were met.

3.0 BLANKS

Laboratory method blanks are analyzed and evaluated to determine the existence and magnitude of possible contamination problems. In general, if analyte concentrations above the instrument detection limit are found in a laboratory method blank, it is likely that the analyte is present as a contaminant in some phase of the analysis procedure and associated sample results may be biased high.

REVIEW RESULTS:

The method blank associated with the samples contained 0.27 ng/kg of 1,2,3,7,8,9-HxCDF, 1.4 ng/kg of 1,2,3,4,6,7,8-HpCDD, 2.0 ng/kg of Total HpCDD, 1.3 ng/kg of OCDF, and 12.0 ng/kg of OCDD. Reported levels of these compounds in the sample were flagged "UJ" (estimated quantitation limit) if the concentrations were below five times the concentrations found in the blank.

4.0 INTERNAL STANDARD RECOVERY

Laboratory performance for individual samples is monitored by means of isotopically labeled internal standards. All samples are spiked with internal standards prior to preparation and analysis. Unusually low or high internal standard recovery values may indicate some deficiency in the analytical system or that some matrix effect exists.

REVIEW RESULTS:

For Method 8290, quantification of the native 2,3,7,8-substituted isomers is based on recovery of the labeled internal standards. Consequently, sample results are automatically corrected for variations in recovery and accurate values are generated. No major internal standard recovery deficiencies were found.

5.0 MATRIX SPIKE ANALYSIS

The matrix spike analysis is designed to evaluate possible inherent effects of the sample matrix on compound recovery. To assess the possible matrix effect, native standards are spiked onto a selected sample. Poor spike recoveries may indicate that a significant matrix effect is present and is adversely affecting sample results for that particular matrix.

REVIEW RESULTS:

For Method 8290, each batch of samples usually contains a field "blank" sample of uncontaminated soil, sediment, or water that is spiked prior to preparation and analysis. Field blanks from this site were not provided for matrix spike analysis. A laboratory quality control spike sample was prepared by extracting clean sand that had been fortified with native standard compounds. It should be noted that evaluation of potential site specific matrix effects that may have been present in this sample batch was not possible without fortified field blank analysis. However, in the reviewer's professional judgement, no data qualification was necessary because the method of quantification compensates for variations in analyte recovery.

6.0 DUPLICATE ANALYSIS

Duplicate sample analysis was not required.

7.0 COMPOUND IDENTIFICATION

Data was acquired by selected-ion-recording (SIR) using groups of ions similar to those described in Method 8290. The five groups represented the tetrachlorinated through octachlorinated congener classes. Each group contained ion masses for the PCDDs, the PCDFs, the corresponding isotopically labeled internal standards, and the polychlorinated diphenylethers (PCDEs) which, if present, could cause false dibenzofuran responses. The criteria used to evaluate positive responses for PCDD/PCDF isomers include: simultaneous response at both ion masses of the PCDD or PCDF, signal-to-noise ratios equal to or greater than 2.5:1 for both ion masses, chlorine isotope ratios within 15% of the theoretical value, chromatographic retention time within -1 to +3 seconds of internal standards (where applicable), chromatographic retention times within elution windows determined by analyses of standard mixtures, and absence of simultaneous response in the PCDF and PCDE scans.

REVIEW RESULTS:

Criteria for positive PCDD/PCDF responses were met for all reported sample results.

Data Qualifiers

ND - The material was analyzed for, but was not detected. The associated numerical value is a method quantitation limit adjusted for sample weight/sample volume, extraction volume, percent solids and sample dilution.

U - The material was analyzed for, but was not detected. The associated numerical value is a method quantitation limit, adjusted for sample weight/sample volume, extraction volume, percent solids and sample dilution.

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount

actually present in the environmental sample. The data should be seriously considered for decision-making and are usable for many purposes.

UJ - The material was analyzed for, but was not detected. The associated numerical value is an estimated/adjusted quantitation limit. The associated numerical value may not accurately or precisely represent the concentration necessary to detect the analyte in this sample.

R - Quality Control indicates that data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

N - Presumptive evidence of presence of material (tentative identification). Confirmation of the analyte requires further analysis.

NJ - The analysis indicates that the analyte is tentatively identified and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

X - The reported result may be a combination of indistinguishable isomers.

QA/Annette Island (D)

****
TWIN CITY TESTING CORPORATION
* PCDF/PCDD ANALYSIS RESULTS *
****
Client....ECOLOGY AND ENVIRONMENT

Sample ID (Client's#)....FAA-ANN-SV-016
Sample ID (TCT#).....258619
Analysis Date.....9/30/91
Filename.....V10925F
Analyst.....MJK
Sample Amount.....0.0107 kg
ICAL Date.....5/7/91
CCAL Filename.....V10925A

NATIVE ISOMERS	CONC. ng/kg	Q	DL ng/kg
2378-TCDF	nd	U	1.30
TOTAL TCDF	22.0		-----
2378-TCDD	nd	U	2.20
TOTAL TCDD	5.6		-----
12378-PeCDF	nd	U	1.10
23478-PeCDF	nd	U	1.40
TOTAL PeCDF	nd	U	-----
12378-PeCDD	nd	U	3.60
TOTAL PeCDD	nd	U	-----
123478-HxCDF	nd	U	0.83
123678-HxCDF	nd	U	1.10
123789-HxCDF	nd	U	2.20
234678-HxCDF	nd	U	2.00
TOTAL HxCDF	1.5		-----
123478-HxCDD	nd	U	2.00
123678-HxCDD	nd	U	1.30
123789-HxCDD	nd	U	3.50
TOTAL HxCDD	12.0		-----
1234678-HpCDF	3.9		-----
1234789-HpCDF	nd	U	2.50
TOTAL HpCDF	13.0		-----
1234678-HpCDD	18.0		-----
TOTAL HpCDD	18.0		-----
OCDF	8.9		-----
OCDD	130.0		-----

INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF-C13....	2.00	67
2378-TCDD-C13....	2.00	79
12378-PeCDF-C13..	2.00	75
23478-PeCDF-C13..	2.00	82
12378-PeCDD-C13..	2.00	76
123478-HxCDF-C13.	2.00	58
123678-HxCDF-C13.	2.00	55
123789-HxCDF-C13.	2.00	59
234678-HxCDF-C13.	2.00	71
123478-HxCDD-C13.	2.00	74
123678-HxCDD-C13.	2.00	64
1234678-HpCDF-C13	2.00	6[illegible]
1234789-HpCDF-C13	2.00	80
1234678-HpCDD-C13	2.00	74
OCDD-C13.....	4.00	67
1234-TCDD-C13....	2.00	na
123789-HxCDD-C13.	2.00	na
2378-TCDD-C137...	0.20	71

Total 2378-TCDD Equivalence = 0.105 ng/kg (Using EPA 8290 Factors)

CONC= Concentrations, calculated as described in EPA method 8290.

DL= Detection limits, calculated as described in EPA method 8290.

na= not applicable

nd= not detected

TCT Invoice Number....4410 91-4448

12-5-91

****
TWIN CITY TESTING CORPORATION
* PCDF/PCDD ANALYSIS RESULTS *
****
Client....ECOLOGY AND ENVIRONMENT

Sample ID (Client's#)....FAA-ANN-SV-017
Sample ID (TCT#).....258620
Analysis Date.....9/25/91
Filename.....V10925E
Analyst.....DJD
Sample Amount.....0.0102 kg
ICAL Date.....5/7/91
CCAL Filename.....V10925A

NATIVE ISOMERS	CONC. ng/kg	Q	DL ng/kg
2378-TCDF	7.7		-----
TOTAL TCDF	130.0		-----
2378-TCDD	6.8		-----
TOTAL TCDD	92.0		-----
12378-PeCDF	6.7		-----
23478-PeCDF	9.4		-----
TOTAL PeCDF	120.0		-----
12378-PeCDD	31.0		-----
TOTAL PeCDD	220.0		-----
123478-HxCDF	26.0		-----
123678-HxCDF	nd	U	21
123789-HxCDF	7.0		-----
234678-HxCDF	4.8		-----
TOTAL HxCDF	360.0		-----
123478-HxCDD	58.0		-----
123678-HxCDD	140.0		-----
123789-HxCDD	98.0		-----
TOTAL HxCDD	1200.0		-----
1234678-HpCDF	nd	U	130
1234789-HpCDF	18.0		-----
TOTAL HpCDF	250.0		-----
1234678-HpCDD	6500.0		-----
TOTAL HpCDD	11000.0		-----
OCDF	160.0		-----
OCDD	25000.0		-----

INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF-C13....	2.00	85
2378-TCDD-C13....	2.00	107
12378-PeCDF-C13..	2.00	86
23478-PeCDF-C13..	2.00	93
12378-PeCDD-C13..	2.00	99
123478-HxCDF-C13.	2.00	92
123678-HxCDF-C13.	2.00	61
123789-HxCDF-C13.	2.00	62
234678-HxCDF-C13.	2.00	49
123478-HxCDD-C13.	2.00	101
123678-HxCDD-C13.	2.00	74
1234678-HpCDF-C13	2.00	80
1234789-HpCDF-C13	2.00	91
1234678-HpCDD-C13	2.00	86
OCDD-C13.....	4.00	96
1234-TCDD-C13....	2.00	na
123789-HxCDD-C13.	2.00	na
2378-TCDD-C137...	0.20	101

Total 2378-TCDD Equivalence = 46 ng/kg
(Using EPA 8290 Factors)

CONC= Concentrations, calculated as described in EPA method 8290.

DL= Detection limits, calculated as described in EPA method 8290.

na= not applicable

nd= not detected

TCT Invoice Number....4410 91-4448

12-5-91

****
TWIN CITY TESTING CORPORATION
* PCDF/PCDD ANALYSIS RESULTS *
****
Client....ECOLOGY AND ENVIRONMENT

Sample ID (Client's#)....FAA-ANN-SV-018
Sample ID (TCT#).....258621
Analysis Date.....9/25/91
Filename.....V10925D
Analyst.....DJD
Sample Amount.....0.0109 kg
ICAL Date.....5/7/91
CCAL Filename.....V10925A

NATIVE ISOMERS	CONC. ng/kg	Q	DL ng/kg
2378-TCDF	2.30		-----
TOTAL TCDF	39.00		-----
2378-TCDD	1.20		-----
TOTAL TCDD	12.00		-----
12378-PeCDF	1.30		-----
23478-PeCDF	1.50		-----
TOTAL PeCDF	16.00		-----
12378-PeCDD	4.70		-----
TOTAL PeCDD	32.00		-----
123478-HxCDF	1.90		-----
123678-HxCDF	0.61		-----
123789-HxCDF	1.20	UJ	-----
234678-HxCDF	nd	U	0.50
TOTAL HxCDF	11.00		-----
123478-HxCDD	5.10		-----
123678-HxCDD	14.00		-----
123789-HxCDD	12.00		-----
TOTAL HxCDD	150.00		-----
1234678-HpCDF	10.00		-----
1234789-HpCDF	1.30		-----
TOTAL HpCDF	28.00		-----
1234678-HpCDD	350.00		-----
TOTAL HpCDD	620.00		-----
OCDF	12.00		-----
OCDD	1400.00		-----

INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF-C13....	2.00	79
2378-TCDD-C13....	2.00	94
12378-PeCDF-C13..	2.00	74
23478-PeCDF-C13..	2.00	73
12378-PeCDD-C13..	2.00	85
123478-HxCDF-C13.	2.00	78
123678-HxCDF-C13.	2.00	73
123789-HxCDF-C13.	2.00	70
234678-HxCDF-C13.	2.00	66
123478-HxCDD-C13.	2.00	89
123678-HxCDD-C13.	2.00	71
1234678-HpCDF-C13	2.00	65
1234789-HpCDF-C13	2.00	71
1234678-HpCDD-C13	2.00	69
OCDD-C13.....	4.00	62
1234-TCDD-C13....	2.00	na
123789-HxCDD-C13.	2.00	na
2378-TCDD-C137...	0.20	100

Total 2378-TCDD
Equivalence = 6.05 ng/kg
(Using EPA 8290 Factors)

CONC= Concentrations, calculated as described in EPA method 8290.

DL= Detection limits, calculated as described in EPA method 8290.

na= not applicable

nd= not detected

TCT Invoice Number....4410 91-4448

12-5-91

APPENDIX D

SAMPLE DOCUMENTATION RECORD

ecology and environment, inc.
368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:	Project Manager:
FE6051	FAA TASK 4 ANNETTE/LEVEL/SISTERS ISLANDS	CHRIS DILLON

Samplers: (Signatures) David K Franzen, Annette K Jackman

Field Team Leader: DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	8 OZ Dioxin/Furans (8280)	REMARKS
01	8/11/91	1500	X				FAA-SSR-SV-002	1	1	
02	8/11/91	1700	X				FAA-SSR-SV-010	1	1	
03	8/11/91	1815		X			FAA-SSR-SV-012	1	1	
04	8/8/91	1145	X				FAA-LVD-SV-005	1	1	
05	8/8/91	1200	X				FAA-LVD-SV-006	1	1	
06	8/8/91	1210	X				FAA-LVD-SV-007	1	1	
07	8/8/91	1500		X			FAA-LVD-SV-011	1	1	
08	8/8/91	1400		X			FAA-LVD-SV-013	1	1	
09	8/6/91	1420		X			FAA-ANN-SV-016	1	1	
10	8/6/91	1500	X				FAA-ANN-SV-017	1	1	
11	8/6/91	1505	X				FAA-ANN-SV-018	1	1	
12	8/5/91	1500		X			FAA-ANN-SV-032	1	1	HEXANE RINSATE

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
David K Franzen	8/14/91 1445	FED EXPRESS			
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FED EXPRESS

BL/Airbill Number: 2684438 30

Date: 8/15/91

234055

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

*See CONCENTRATION RANGE on back of form.

DRAFT

ecology and environment, inc.
368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:	Project Manager:
FE6051	TASK 4 - FAA ANNETTE & SISTERS ISLANDS FAA FACILITIES	CHRIS DILLON

Samplers: (Signatures)	Field Team Leader:
Annette R. Jackman David K Franzen	DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	40ML VOA - VOA (8240)	8OZ JAR - BN/PEST/PCB (8270)	8OZ JAR - METALS (6010)	8OZ JAR - OP-PEST (8140)	8OZ JAR - AL-HERB (8150)	8OZ JAR - VPH (8020)	8OZ JAR - EPH (8100)	1L POLY - METALS (6010)	8OZ AMBER - BN (8270)	8OZ AMBER - VPH (8020)	8OZ AMBER - EPH (8100)	8OZ AMBER - TRPH (418.1)	REMARKS / MATRIX	OVA
01	8-5-91	1545	X				FAA-ANN-SV006	6	2	1	1	1	1								SOIL	BKG
02	8-6-91	1400	X				FAA-ANN-SV-014	7	2	1	1			1	1	1					SOIL	BKG
03	8-1-91	1740		X			FAA-SSR-SV-013	7	2								1	1	1	1	1	WATER	BKG
04	8-7-91	1500		X			FAA-SSR-SV-014	2	2													WATER	BKG

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Annette R. Jackman	8-14-91/1000				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FED EX

BL/Airbill Number: 2685443815

Date: 8-14-91

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

*See CONCENTRATION RANGE on back of form.

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D-4

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International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Project No.:	Project Name:	Project Manager:
FE6051	TASK 4 - FAA GALENA + ANNETTE I, FAA FACILITIES	CHRIS DILLON
Samplers: (Signatures)		**Field Team Leader:**
Annette K. Graham		DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	LAMBER - VPH, EPH, TEPH (8020, 8100, 418.1)							REMARKS
1	7/31/91	1500	✓				FAA-GAL-SV-006	3	3							WATER
2	7/31/91	1500	✓				FAA-~~B~~ANN-SV-001	3	3							WATER

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Annette K. Graham	7/31/91 1600				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FED EX

BL/Airbill Number: 1010807033

Date: 8-1-91

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

*See CONCENTRATION RANGE on back of form.

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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:	Project Manager:
FE6051	FAA TASK 4 - GALENA	CHRIS DILLON

Samplers: (Signatures) Annette L. Jackman

Field Team Leader: DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	40 ml - VOA 8240	1 LITER POLY-METALS 7000	8oz AMBER - BNA 8270	8oz AMBER - PEST 8080	8oz AMBER - PAH 8100	8oz AMBER - DIOXIN 8150	8oz AMBER - CL-HERB 8150	REMARKS
006	7/9	1100	✓				FAA-GAL-SV-006	8	2	1	1	1	1	1	1	

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Annette L. Jackman	7-9-91/1700					FED EX
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: 0533890840
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Date: 7-10-91

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

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International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Project No.: FE6051
Project Name: TASK 4 - ANNETTE LAND FAA FACILITY
Project Manager: CHRIS DILLON
Samplers: (Signatures) Annette R Lockman, David K Finnegan
Field Team Leader: DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	40ml VIAL - VOC (8240)	8 oz JAR - BN/PEST/PCB (8270)	8 oz JAR - METALS (6010)	8 oz JAR - OP-PEST (8140)	8 oz JAR - CL-HERB (8150)	8 oz JAR - VPN (8020)	8 oz JAR - EPN (8100, 8270)	8 oz JAR - TRPH (418.1)	40 ml VIAL - PCB (8270)	REMARKS
01	8-5-91	1500		✓		PCB	FAA-ANN-SV-002	1									1	OVA
02	8-5-91	1500		✓		PCB	FAA-ANN-SV-003	1									1	8 ppm
03	8-5-91	1520	✓				FAA-ANN-SV-004	6	2	1	1	1	1					BKG
04	8-5-91	1530	✓				FAA-ANN-SV-005	7	2	1	1			1	1	1		2 ppm
05	8-5-91	1545	✓				FAA-ANN-SV-006	6	2	1	1	1	1					BKG
06	8-5-91	1700		✓		PCB	FAA-ANN-SV-007	1									1	BKG
07	8-6-91	1050		✓		PCB	FAA-ANN-SV-008	1									1	BKG
08	8-6-91	1105		✓		PCB	FAA-ANN-SV-009	1									1	BKG
09	8-6-91	1120		✓		PCB	FAA-ANN-SV-010	1									1	BKG
10	8-6-91	1130		✓		PCB	FAA-ANN-SV-011	1									1	1.3 ppm
11	8-6-91	1140		✓		PCB	FAA-ANN-SV-012	1									1	BKG
12	8-6-91	1145		✓		PCB	FAA-ANN-SV-013	1									1	0.70 ppm
13	8-6-91	1400	✓				FAA-ANN-SV-014	7	2	1	1			1	1	1		BKG
14	8-6-91	1425	✓				FAA-ANN-SV-015	6	2	1	1	1	1					0.3 ppm

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Annette R. Lockman	8-10-91 / 1400				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FED EX
BL/Airbill Number: 286844 3804
Date: 8-12-91

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
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CHAIN-OF-CUSTODY RECORD

Project No.: FE6051
Project Name: TASK 4 - ANNETTE ISLAND FAA FACILITY
Project Manager: CHRIS DILLON
Samplers: (Signatures) Annette R. Lackman, David K. Finnegan
Field Team Leader: DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	40ML VIAL - VOC (8240)	32OZ JAR - BNPRB/PEST (8270)	32OZ JAR - METALS (6010)	32OZ JAR - OP PEST (8140)	32OZ JAR - DI WTR (TCL)	32OZ JAR - VPH (8020)	32OZ JAR - EPH (8100)	32OZ JAR TPH (418.1)	40ML VIAL - PCB (8080)	REMARKS
15	8-6-91	1420		✓			FAA-ANN-SV-016	9	2	1	1	1	1	1	1	1		OVA
16	8-6-91	1500	✓				FAA-ANN-SV-017	6	2	1	1	1	1					BKG
17	8-6-91	1510	✓				FAA-ANN-SV-018	6	2	1	1	1	1					BKG
18	8-6-91	1515	✓				FAA-ANN-SV-019	6	2	1	1	1	1					BKG
19	8-6-91	1610		✓		PCB	FAA-ANN-SV-020	1									1	5ppm
20	8-6-91	1620		✓		PCB	FAA-ANN-SV-021	1									1	20ppm
21	8-6-91	1630		✓		PCB	FAA-ANN-SV-022	1									1	10ppm
22	8-6-91	1635		✓		PCB	FAA-ANN-SV-023	1									1	10ppm
23	8-6-91	1640		✓		PCB	FAA-ANN-SV-024	1									1	10ppm
24	8-6-91	1650		✓		PCB	FAA-ANN-SV-025	1									1	5ppm
25	8-6-91	1700		✓		PCB	FAA-ANN-SV-026	1									1	3ppm
26	8-6-91	1710		✓		PCB	FAA-ANN-SV-027	1									1	15ppm
27	8-6-91	1720		✓		PCB	FAA-ANN-SV-028	1									1	>1000ppm
28	8-6-91	1740		✓		PCB	FAA-ANN-SV-029	1									1	>1000ppm

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Annette R. Lackman	8-8-91/1420				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FED EX.
BL/Airbill Number: 286844380 4
Date: 8-12-91

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CHAIN-OF-CUSTODY RECORD

Project No.:	Project Name:	Project Manager:
FE1-051	TASK 4 - ANNETTE ISLAND FAA FACILITY	CHRIS DILLON

Samplers: (Signatures)	Field Team Leader:
Annette R. Lockman David Franzen	DAVE FRANZEN

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	40ML VIAL - PCB (8270)	40ML VIAL - VOA (8240)	REMARKS
29	8/8/91	1750		V		PCB	FAA-ANN-SV-030	1	1		QA/QC 25 ppm BKG.
30	8/8/91	1500		V			FAA-ANN-SV-031	2		2	

DL

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Annette R. Lockman	8-13-91/1400				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FED EX.

BL/Airbill Number: 2868443804

Date: 8-12-91

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

*See CONCENTRATION RANGE on back of form.

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APPENDIX E

ELECTRICAL COMPONENT SUMMARY

Table E-1

ELECTRICAL COMPONENT SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4-FE6061
ANNETTE ISLAND, ALASKA
AUGUST 1991

Location	Component	Serial Number	Status	PCB Concentration	Ownership
VORTAC	Transformer	Not visible	Active	Unknown	MPL
VORTAC	Transformer	Not visible	Active	Unknown	MPL
VORTAC	Small bridge, transformer x 2	Not visible	Stored	Unknown	FAA
VORTAC	Coaxial resistor	463A	Stored	Unknown	FAA
VORTAC	Large coaxial resistor x 2	659	Stored	Unknown	FAA
VORTAC	Rectifier	689	Stored	15 mg/kg	FAA
VORTAC	Rectifier	690	Stored	12 mg/kg	FAA
RCAG	Rectifier	A2211080 FAA-ANN-SV-008	Stored	24 mg/kg	FAA
RCAG	Rectifier	A2211080 FAA-ANN-SV-009	Stored	25 mg/kg	FAA
RCAG	Rectifier	A2211080 FAA-ANN-SV-010	Stored	23 mg/kg	FAA
RCAG	Rectifier	A2211080 FAA-ANN-SV-011	Stored	26 mg/kg	FAA
RCAG	Rectifier	A2211080 FAA-ANN-SV-012	Stored	26 mg/kg	FAA
RCAG	Rectifier	A2211080 FAA-ANN-SV-013	Stored	230 mg/kg	MPL
RCAG	Transformer	Not visible	Active	Unknown	MPL
NDB	Transformer	Not visible	Active	Unknown	MPL
NDB	25 KVA transformer	Not visible	Active	No PCB	MPL
Hangar	Transformer	1964867	Stored	No	FAA
Hangar	Transformer	9863458	Stored	No	FAA
Hangar	Transformer	7029198	Stored	No	FAA
Hangar	Transformer	6-37919-1-100	Stored	Empty	FAA

Table E-1

ELECTRICAL COMPONENT SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4-FE6061
ANNETTE ISLAND, ALASKA
AUGUST 1991

Location	Component	Serial Number	Status	PCB Concentration	Ownership
Hangar	Transformer	731126993	Stored	No	FAA
Hangar	Transformer	2837629	Stored	Unknown	FAA
Hangar	Transformer	3678187	Stored	No	FAA
Hangar	Transformer	74VB092009	Stored	No	FAA
Hangar	Transformer	C4262G	Stored	34 mg/kg	FAA
Hangar	Transformer	1913086	Stored	No	FAA
Hangar	Transformer	2838166	Stored	20 mg/kg	FAA
Hangar	Transformer	FV312309	Stored	No	FAA
Hangar	Transformer	1889111	Stored	No	FAA
Hangar	Transformer	B56000	Stored	>50 mg/kg	FAA
Hangar	Transformer	59SH2233	Stored	No	FAA
Hangar	Transformer	59SJ701	Stored	No	FAA
Hangar	Transformer	59SJ700	Stored	No	FAA
Hangar	Transformer	59SJ702	Stored	No	FAA
Hangar	Transformer	9855709	Stored	38 mg/kg	FAA
Hangar	Transformer	59SH2232	Stored	40 mg/kg	FAA
Hangar	Transformer	9868456	Stored	No	FAA
Hangar	Transformer	B560002	Stored	>50 mg/kg	FAA
Hangar	Transformer	B560001	Stored	>50 mg/kg	FAA
Hangar	Transformer	9863459	Stored	No	FAA
Hangar	Transformer	1964868	Stored	No	FAA
Hangar	Transformer	C403693	Stored	>50 mg/kg	FAA
Hangar	Transformer	6810927	Stored	No	FAA
Hangar	Transformer	3263353	Stored	<5 mg/kg	FAA
Hangar	Transformer	3263301	Stored	<5 mg/kg	FAA
Hangar	Transformer	3133557	Stored	<5 mg/kg	FAA

Table E-1

ELECTRICAL COMPONENT SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4-FE6061
ANNETTE ISLAND, ALASKA
AUGUST 1991

Location	Component	Serial Number	Status	PCB Concentration	Ownership
Hangar	Transformer	6899137	Stored	100,000 mg/kg	FAA
Hangar	Transformer	6899138	Stored	59,000 mg/kg	FAA
Hangar	Transformer	6899136	Stored	62,000 mg/kg	FAA
Hangar	Transformer	9980708	Inactive	<5 mg/kg	FAA
Hangar	GE two-way switch	Not visible	Inactive	9.3 mg/kg	FAA
Hangar	Transformer	9979656	Inactive	<5 mg/kg	FAA
Glide slope	Voltage stabilizer	J9264, J9258	Stored	Unknown	FAA
Glide slope	Transformer	Not visible	Inactive	<5 mg/kg	FAA
Glide slope	Transformer	23-22-125	Inactive	Dry	FAA
ATCT	Transformer	Not visible	Inactive	<5 mg/kg	MPL
ATCT	Transformer	Not visible	Active	Unknown	MPL
ALS	Transformer x 75	FAA 10556	Inactive	Unknown	FAA
ALS	Capacitor	Not visible	Inactive	Unknown	FAA
Middle Marker	Transformer x 2	A34REA	Stored	Unknown	FAA
Remote receiver	Rusted transformer	Not visible	Discarded	Unknown	FAA
PNA Building	Transformer	Not visible	Active	Unknown	MPL

Key:

MPL = Metlakatla Power and Light.

APPENDIX F

PHOTOGRAPHIC DOCUMENTATION

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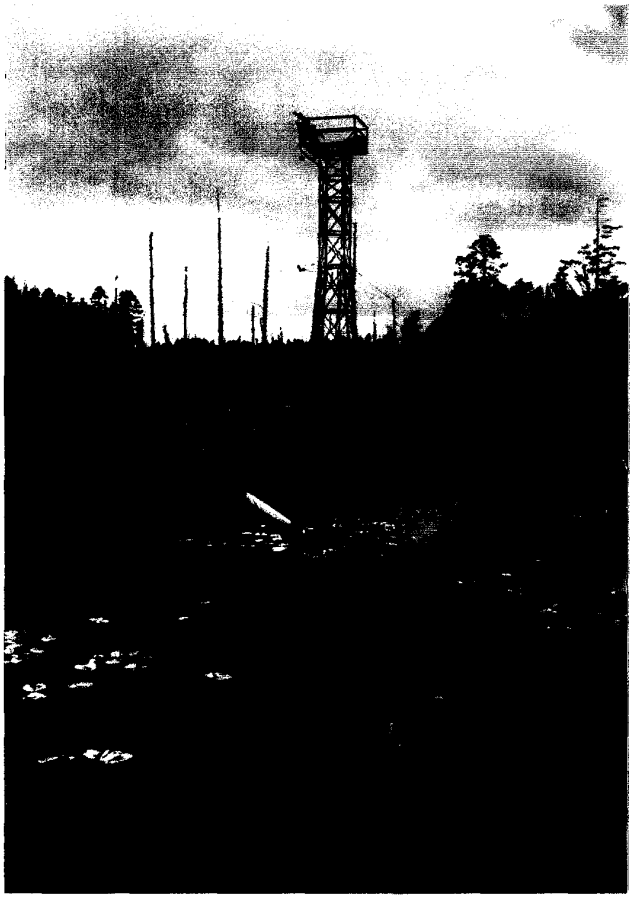
PHOTOGRAPHIC RECORD



SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

< < <

No.:A-34

Subject:ALS towers and adjacent beaver pond

Photographer:A. Sackman

Date:8-4-91

Direction:South

> > >

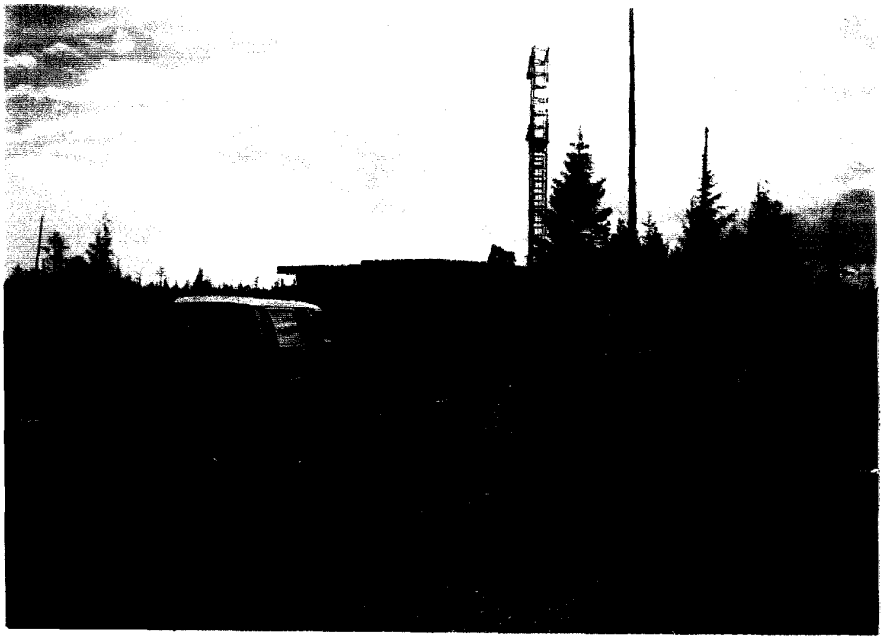
No.:B-3

Subject:Remote Receiver Bldg.

Photographer:A. Sackman

Date:8-4-91

Direction:West



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PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

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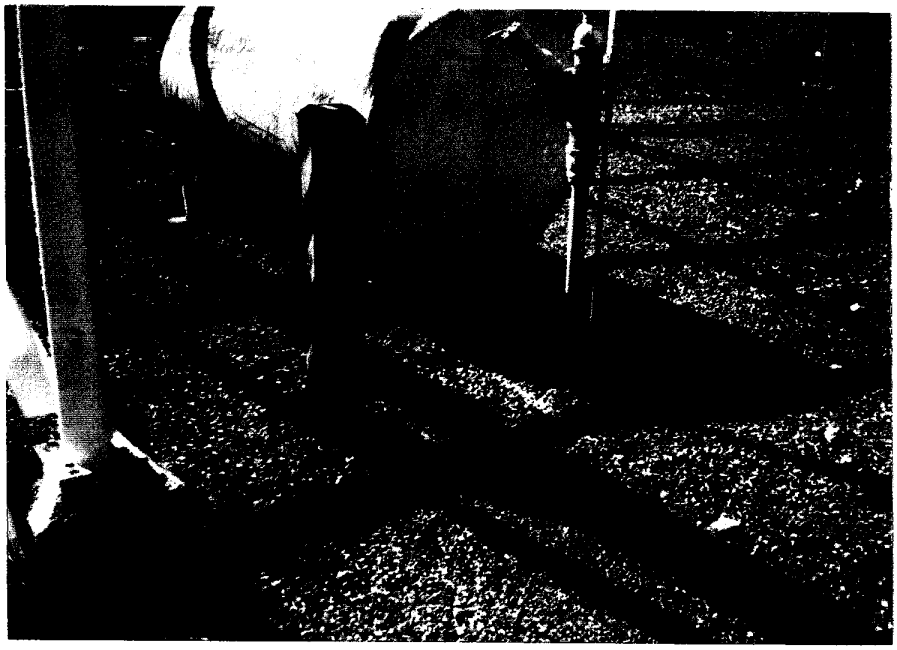
No.:D-24

Subject:VORTAC transformer, soil sample FAA-FYU-SV-

Photographer:A. Sackman

Date:8-5-91

Direction:North



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No.:D-25

Subject:VORTAC UST, sample FAA-FYU-SV-005

Photographer:A. Sackman

Date:8-5-91

Direction:West

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PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:D-11

Subject:RCAG, drums next to road

Photographer:A. Sackman

Date:8-5-91

Direction:East

>>>

No.:D-22

Subject:VORTAC- rectifiers, samples FAA-FYU-SV-002, -003

Photographer:A. Sackman

Date:8-5-91

Direction:East

ecology and environment, inc.

PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:B-32

Subject:Hangar, transformers stored on west side

Photographer:A. Sackman

Date:8-4-91

Direction:East

>>>

No.:D-2

Subject:RCAG Bldg. 408, storage shed and towers

Photographer:A. Sackman

Date:8-5-91

Direction:East

ecology and environment, inc.

PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:B-16

Subject:Hangar transformers in room A

Photographer:A. Sackman

Date:8-4-91

Direction:West

>>>

No.:B-28

Subject:CT Bldg. remains

Photographer:A. Sackman

Date:8-4-91

Direction:South

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PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:D-27

Subject:VORTAC, stressed vegetation, sample FAA-ANN-SV-006

Photographer:A. Sackman

Date:8-5-91

Direction:South

>>>

No.:D-31

Subject:Glide Slope Bldg. 405, leaking transformer in transclosure, oil sample FAA-ANN-SV-007

Photographer:A. Sackman

Date:8-5-91

Direction:East

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PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:B-5

Subject:Remote Receiver, drums in swamp

Photographer:A. Sackman

Date:8-4-91

Direction:North

>>>

No.:B-9

Subject:Hangar

Photographer:A. Sackman

Date:8-4-91

Direction:Northwest

ecology and environment, inc.

PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:E-7

Subject:RCAG, background soil sample FAA-ANN-SV-016

Photographer:A. Sackman

Date:8-6-91

Direction:West

>>>

No.:E-8

Subject:RCAG, soil sample FAA-ANN-SV-015 collected in stressed vegetation

Photographer:A. Sackman

Date:8-6-91

Direction:Southwest

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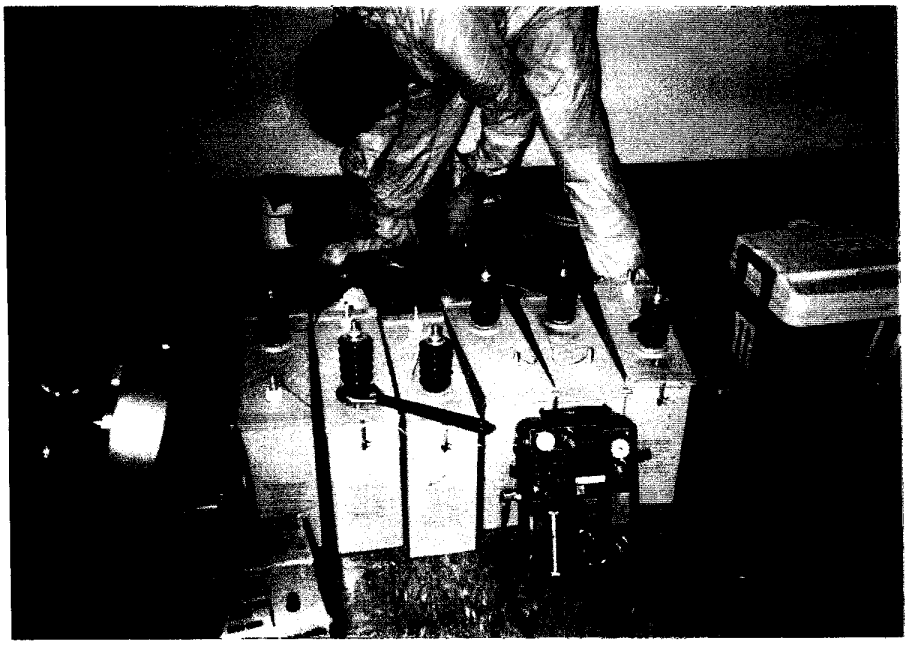
PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061



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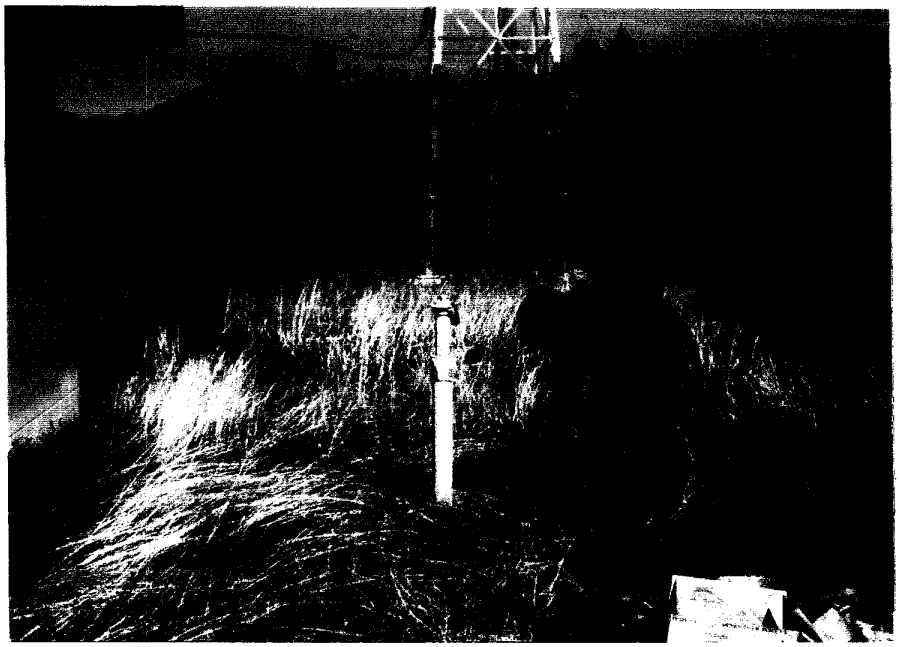
No.:E-5

Subject:RCAG capacitors, oil samples FAA-ANN-SV-008 through -013

Photographer:A. Sackman

Date:8-6-91

Direction:West



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No.:E-6

Subject:RCAG UST, soil sample FAA-ANN-SV-014

Photographer:A. Sackman

Date:8-6-91

Direction:North

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PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

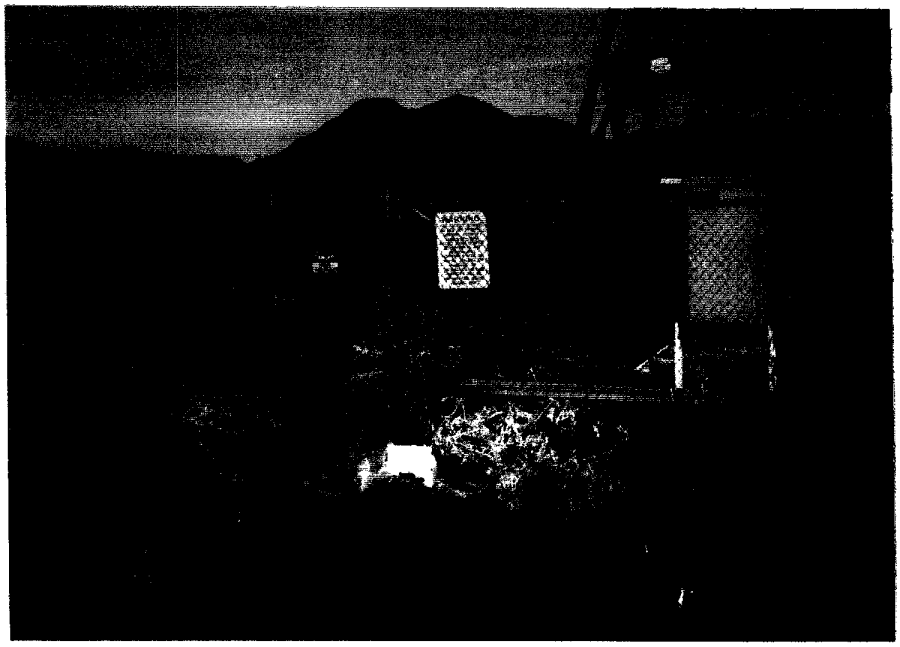
No.:E-9

Subject:NDB, soil samples FAA-ANN-SV-017, and -018, contain burned remains NDB Bldg.

Photographer:D. Franzen

Date:8-6-91

Direction:North



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No.:E-11

Subject:NDB tower, soil sample FAA-ANN-SV-019 collected in stressed vegetation

Photographer:D. Franzen

Date:8-6-91

Direction:North

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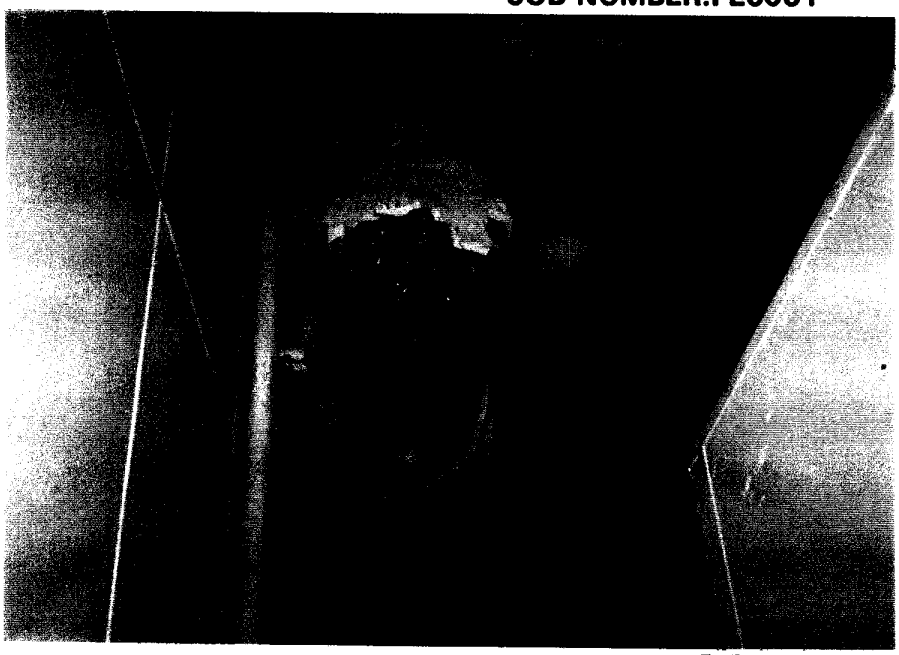
PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061



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No.:B-14

Subject:Hangar (second floor), ACM insulation

Photographer:A. Sackman

Date:8-4-91

Direction:Up

>>>

No.:B-15

Subject:Hangar (second floor), damaged ACM insulation and debris

Photographer:A. Sackman

Date:8-4-91

Direction:East

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PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:A-18

Subject:VORTAC Property, rusted drum

Photographer:A. Sackman

Date:8-4-91

Direction:East

>>>

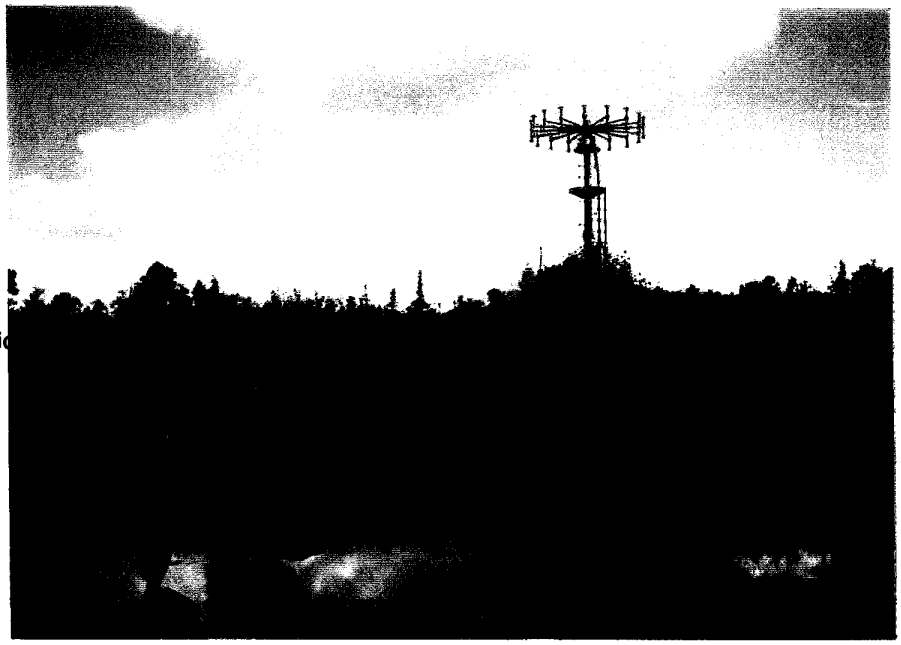
No.:A-19

Subject:DF Tower and tank foundati

Photographer:A. Sackman

Date:8-4-91

Direction:East



ecology and environment, inc.

PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061

<<<

No.:A-31

Subject:ALS, drums along road

Photographer:A. Sackman

Date:8-4-91

Direction:North

>>>

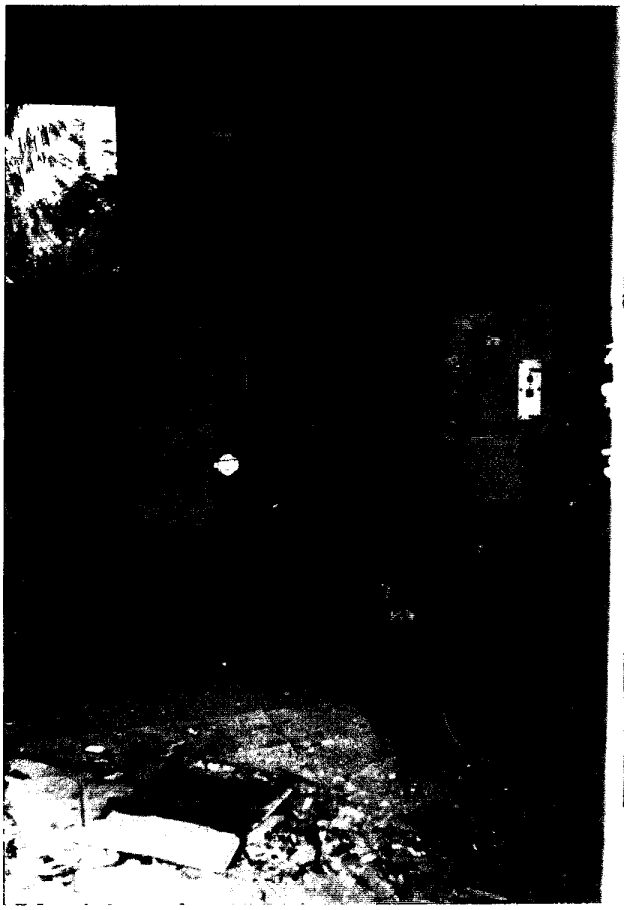
No.:A-33

Subject:Middle Marker building

Photographer:A. Sackman

Date:8-4-91

Direction:North



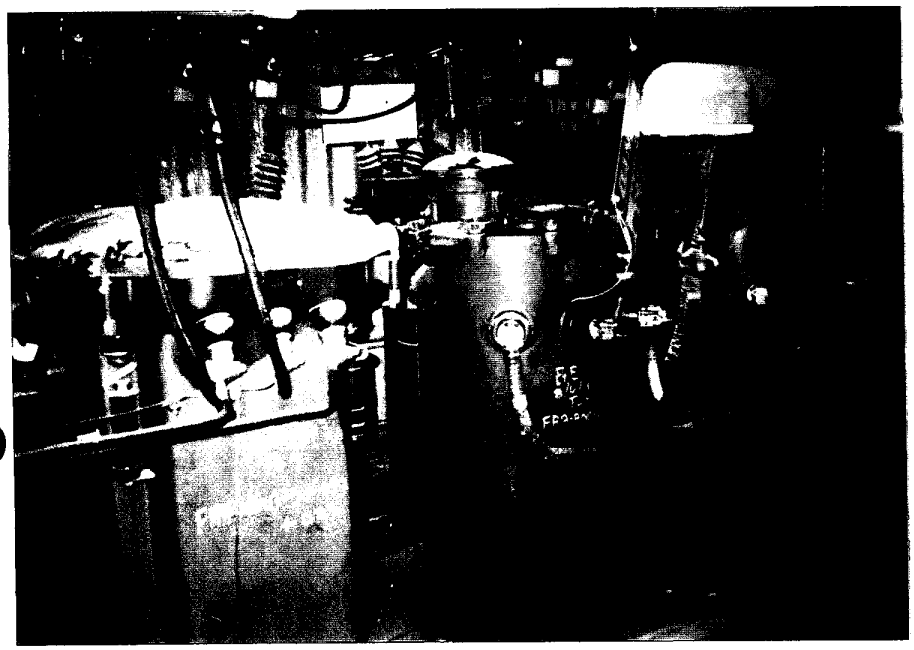
ecology and environment, inc.

PHOTOGRAPHIC RECORD

SITE NAME:Annette Island FAA Station

SITE LOCATION:Annette Island

JOB NUMBER:FE6061



<<<

No.:E-15

Subject:Hangar, transformer oil samples FAA-ANN-SV-022 to -024, room C

Photographer:A. Sackman

Date:8-6-91

Direction:East

>>>

No.:E-18

Subject:ATCT tower, transformer oil sample FAA-ANN-SV-030, in transclosure

Photographer:A. Sackman

Date:8-6-91

Direction:South

APPENDIX G

ADEC CLEANUP SCORE SHEETS

APPENDIX D
ALASKA STATE CLEANUP MATRIX SCORESHEET
VORTAC FACILITY
ANNETTE ISLAND, ALASKA

1. Depth to Subsurface Water		
< 5 feet	(10)	
5 - 15 feet	(8)	1
15 - 25 feet	(6)	
25 - 50 feet	(4)	
> 50 feet	(1)	
2. Mean Annual Precipitation		
> 40 inches	(10)	
25 - 40 inches	(5)	10
15 - 25 inches	(3)	
< 15 inches	(1)	
3. Soil Type (Unified Soil Classification)		
Clean, course-grained soils	(10)	
Coarse-grained soils with fines	(8)	8
Fine-grained soils (low OC)	(3)	
Fine-grained soils (high OC)	(1)	
4. Potential Receptors		
Public Well within 1000 feet, or		
Private Well(s) within 500 feet	(15)	
Municipal/priv well w/i 1/2 mi	(12)	1
Municipal/priv well w/i 1 mile	(8)	
No known well within 1/2 mile	(6)	
No known well within 1 mile	(4)	
Non-potable groundwater	(1)	
5. Volume of Contaminated Soil		
> 500 cubic yards	(10)	
100 - 500 cubic yards	(8)	2
25 - 100 cubic yards	(5)	
>De Minimis - 25 cubic yards	(2)	
De Minimis	(0)	
	TOTAL =	20

Matrix Score		Cleanup Level in mg/kg			
		Diesel	Gasoline/Unknown		
		diesel range petroleum hydrocarbons	gasoline range petroleum hydrocarbons	Benzene	BETX
Level A	> 40	100	50	0.1	10
Level B	27 - 40	200	100	0.5	15
Level C	21 - 26	1000	500	0.5	50
Level D	< 20 *	2000	1000	0.5	100

* Indicates score generated for the facility/site

4. ENVIRONMENTAL SETTING

This section describes the Annette Island FAA Station environmental setting. It includes detailed discussions of the station geology, groundwater, surface water, climate, and a description of sensitive environments in the station area.

4.1 GEOLOGY

Annette Island is part of the northern region of an extensive coastal mountain range called the Cordilleran Range. The range extends along the western edge of North America from Southern California to the Alaskan Peninsula. Annette Island lies in the Wrangell-Revillagigedo belt of metamorphic rocks.

During the Pleistocene Epoch, the Metlakatla area was presumably covered by ice several times. Glaciers smoothed the present Metlakatla Peninsula and deeply eroded valleys on the rest of Annette Island. The last major glaciation ended more than 10,000 years ago.

The Annette Island FAA Station is situated on the southwestern portion of Annette Island in an area referred to as the Metlakatla Peninsula (see Figure 3-1). This area is relatively flat compared to the mountainous northern part of the island. The maximum elevation on the peninsula is Yellow Hill at 540 feet above mean sea level (AMSL), compared to mountains of over 2,000 feet AMSL in the northern part of the island. The airport area elevation is less than 100 feet AMSL. The Metlakatla Peninsula comprises approximately 18 square miles.

Bedrock underlying the Metlakatla Peninsula is chiefly composed of schist, gneiss, and hornfels. These rocks are locally mixed and in part gradational with foliated granitic rocks, which in turn grade into foliated quartz diorite and diorite. Strike and dip of beds are generally variable, and minor offsets are common. Bedrock is of late Paleozoic to early Mesozoic age. Six types of surficial geologic materials of Quaternary age are present: firm diamicton, emerged shore, modern shore and delta, alluvial deposits, very soft muskeg and other organic deposits, and firm to soft artificial fill (USGS 1971).

Surface lithology found on the island include muck, glacial till, and raised beach deposits. The general lithology and stratigraphy of the raised beach deposits change laterally over short distances. The deposits are generally 5 to 10 feet in thickness. At a location on the

northern edge of the Annette Island FAA Station, the deposits consist of 4 to 6 feet of sandy gravel overlying silty and clayey, bluish-gray sand of unknown thickness. The gravel is poorly sorted (USGS 1971).

Surface soil consists of poorly drained, sandy gravel intermixed with marine clay and decomposed organic matter. The depth of the sandy gravel typically ranges from 4 to 6 feet, with a maximum thickness of 30 feet (Alaska Department of Community and Regional Affairs [ADCRA] 1984; USGS 1971).

4.2 GROUNDWATER

Although annual precipitation in southeastern Alaska is as much as 269 inches, the igneous and metamorphic rocks underlying most of the region generally yield only small amounts of water. The overlying muck, when present, is relatively impermeable and does not allow for recharge of the underlying bedrock. Interbedded gravel, sand, silt, and clay interpreted as raised beach deposits may be sources of groundwater. The number, spacing, attitude, size, and interconnection of fractures in bedrock determine the availability and movement of groundwater. Highly fractured ultrabasic rocks located south of Yellow Hill (north of the Annette Island FAA Station) provide openings for seeps and small springs. Other small springs, which typically are dry in the summer, issue from fractured rocks along the west side of the peninsula. A test hole drilled at the northern end of the Annette Island FAA Station produced water at 0.5 gallon per minute (gpm) for 8 hours from 70 to 90 feet below ground surface (bgs) and 37 gpm for 23 hours from 332 to 336 feet bgs (USGS 1971). Groundwater is not currently used as a drinking water source on the island.

4.3 SURFACE WATER

The Metlakatla Peninsula, is mostly a swampy, heavily vegetated lowland generally less than 200 feet above sea level (USGS 1971).

Chester Lake is Metlakatla's community water source. The lake is 5 miles northeast of the FAA Station (see Figure 3-1). Water is transferred to a treatment plant for addition of chloride and fluoride and then flows via underground pipes to approximately 400 connections in the town. Average per capita consumption is estimated at 250 gallons per day (gpd), with peak use in the community reaching an estimated 0.8 million to 1.5 million gpd. The system capacity is 1.5 million gpd (ADCRA 1984).

According to FAA records, water for the Annette Island Airport is supplied by Yellow Lake, from an elevation of 200 feet and located directly east of Yellow Hill (see Figure 3-1). Water from Yellow Lake is currently supplied to the Living Quarters-West Facility, the RCAG Facility, and the airport (see Figure B-1).

4.4 CLIMATE

The Metlakatla Peninsula lies in the maritime climate zone of southeastern Alaska with warm winters, cool summers, and relatively heavy precipitation. Average summer temperatures range from 36°F to 52°F. Frequent storms contribute to the high average annual precipitation of 115 inches. In addition to the rain, cloud cover is present 62% of the time, resulting in poor visibility. Average winter temperatures range from 28°F to 42°F. Annual snowfall averages 61 inches (ADCRA 1984).

Annette Island wind data, collected over a 29-year period, indicate an average wind speed of 10 miles per hour with winds primarily from the southeast. Metlakatla, however, is generally protected from southeasterly winds due to its location on the lee side of the island (ADCRA 1984).

4.5 SENSITIVE ENVIRONMENTS

A description of cultural resources, vegetation, and wildlife near the Annette Island FAA Station is provided in the following subsections.

4.5.1 Cultural Resources

A request was made of the State of Alaska, Department of Natural Resources (ADNR), to determine whether prehistoric or historic cultural resources exist at any of the FAA stations under investigation. Based on the Alaska Heritage Resources Survey, no cultural resources have been identified at the Annette Island FAA Station (ADNR 1991).

4.5.2 Vegetation and Wildlife

Standing water on the Metlakatla Peninsula has resulted in a muskeg-dominated landscape. Vegetation on the peninsula is primarily composed of sedges, sphagnum moss, crowberry, Labrador tea, bog rosemary, swamp laurel, isolated strands of mountain hemlock, Alaska yellow cedar, and yellow pine (ADCRA 1984).

The shoreline of the island, particularly in areas protected from wave action, is bordered by strand vegetation that consists of Lyngbye's sedge, sand spurry, tufted hairgrass, beach ryegrass, and Pacific silverweed. Nearshore vegetation includes several species of kelp, large brown algae, red coralline algae, and eelgrass.

The American Peregrine falcon is a federally listed endangered species that nests in southeastern Alaska. They breed primarily in the outer islands and along the coast; however, have not been identified on Annette Island. Other regional endangered species include the humpback, fin, and gray whales, which may pass through neighboring waters as they migrate from summer feeding areas to winter breeding areas.

The Misty Fiords National Monument Wilderness lies on the mainland approximately 10 miles east of Annette Island, across Revillagigedo Channel. The wilderness area does not border Annette Island.

Fishing and lumbering industries support the Metlakatla town economy. A sizable fishing fleet exists in this area, and the only fish traps allowed in Alaska are used in this area. According to the 1989 preliminary Alaska commercial fisheries harvest values, the commercial harvest for the state of Alaska in the southeastern region was: total salmon, 257,870 pounds (Annette Island trap salmon, 500.26 pounds; gill net salmon, 9,930.60 pounds) total herring harvest (in areas other than Seymour Canal, Sitka Sound, and Kah Shakes), 3,400 pounds; total shellfish harvest, 9,929 pounds; total groundfish landed for all gears, 9,162.5 pounds (Ref).

5. SAMPLE QUALITY ASSURANCE AND ANALYTICAL RESULTS

This section presents the analytical results for analytes found in at least one sample per matrix and discusses the QA results from field and analytical data evaluation. The interpretation of the analytical data is presented in Section 6. A complete list of all target analytes and a presentation of associated analytical QA/quality control (QC) specifics are presented in Appendix C. Appendix D contains the sample documentation record.

The sampling program was designed on a biased basis. Consequently, sample points were chosen using a worst-case scenario that identified those areas with the greatest potential for contamination. Selection of target analytes, based on a similar rationale, included testing for all known or potential contaminants on a sample-specific basis.

All samples were collected, packaged, stored, shipped, and analyzed in accordance with EPA and ADEC guidelines and standard operating procedures as defined in the Generic Work Plan prepared for the Annette Island FAA Station investigation. Table 5-1 provides a summary of the analytical methods employed for sample analyses. Figures 3-3 through 3-5 present sample locations.

5.1 LABORATORY QUALITY CONTROL CRITERIA

Data qualifiers are employed for both metal and organic data results. These qualifiers are defined below:

J = The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the sample. The data should be seriously considered for decision-making and are usable for many purposes;

NJ = The analysis indicated that the analyte has been tentatively identified and that the associated numerical value may not be consistent with the amount actually present in the sample.

ND = Not detected.

R = QC information indicates that data are unusable for any purpose. The analyte was analyzed for, but the presence or absence of the analyte has not been verified.

5.1.1 Metals Data

Data validation discussed below applies to all Priority Pollutant furnace metals, mercury, inductively coupled argon plasma metals, and cyanide data. Data qualifiers are assigned whenever some aspect of laboratory QC is not achieved for a sample. The R qualifier is applied when QC criteria are out of control indicating that the associated data are not acceptable for use. QC criteria considered for metals analyses include or apply to: sample holding times, calibration verification, laboratory-reported detection limits, preparation blank results, inductively coupled argon plasma spectrometry interference check sample results, spike sample results, duplicate sample results, laboratory control sample results, and atomic absorption (AA) post-digestion spike recovery, and duplicate injection results.

Selection of sampling points was conducted utilizing a "worst case" scenario. With the exception of the background sample, samples were collected at points either known or expected to be the most probable locations of maximum concentrations of contaminants. Selection of target analytes, based on a similar rationale, included testing for all known or potential contaminants on a sample-specific basis.

The continuing calibrations of arsenic and lead were outside QC limits; consequently, arsenic results were flagged J (estimated value) in the following samples: FAA-ANN-SV-004, FAA-ANN-SV-017, FAA-ANN-SV-018, and FAA-ANN-SV-019. Lead values were flagged J in samples FAA-ANN-SV-015 and FAA-ANN-SV-016.

Lead results were flagged J due to post-digestion spike recovery below the QC criteria in samples FAA-ANN-SV-014, FAA-ANN-SV-015, and FAA-ANN-SV-016. The low spike recovery could indicate that the actual lead concentrations may exceed the values reported in Table 5-3.

5.1.2 Organic Data

Data validation discussed below applies to all VOCs, base/neutral (B/N) extractables, pesticides/PCBs, organophosphorus pesticides, chlorinated herbicides, dioxin/furans, volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), and total recoverable petroleum hydrocarbons (TRPH). Data qualifiers are assigned using slightly different criteria for organic analyses. These QC criteria include or apply to: sample holding times, instrument calibration, laboratory method blank results, surrogate spike recovery results, matrix spike/matrix spike duplicate results, and internal standard performance results.

A few sample results have been flagged J due to low surrogate spike recovery, or poor internal standard performance. The majority of samples with surrogate spike or internal

standard performance problems were reanalyzed. In those cases when reanalysis did not correct the problem, it was probably a result of sample matrix interferences and not as a result of poor laboratory performance.

Holding times were exceeded for the VOC, B/N, Pesticide/PCB, organophosphorus pesticide, and chlorinated herbicide analyses of some samples, and the affected data were flagged J.

Continuing calibration criteria were not achieved for the Pesticide/PCB, and VPH analyses for some samples; the results were flagged J. Positive results for the VOC analysis were flagged J as estimated quantities based on high surrogate recoveries in samples FAA-ANN-SV-006, FAA-ANN-SV-016, and FAA-ANN-SV-019, which could indicate that the actual VOC concentrations may be lower than those reported in Table 5-4.

Positive results and quantification limits for the VOC analysis were flagged J as estimated based on low surrogate recovery in samples FAA-ANN-SV-017 and FAA-ANN-SV-018. Low surrogate recovery could indicate that the actual VOC concentrations may be higher than those reported in Table 5-4.

Positive VPH results were reported for FAA-ANN-SV-005 and FAA-ANN-SV-016, which indicated the presence of gasoline in the samples (see Table 5-6). Although the data confirmed the presence of VPHs, the sample chromatogram did not exhibit a complete peak pattern similar to the gasoline standard pattern. Therefore, the reported results for VPH as gasoline in these samples were flagged NJ as tentatively identified at estimated concentrations.

5.2 PRESENTATION OF ANALYTICAL RESULTS

Annette Island FAA Station sample collection data are presented in Table 5-2. This information includes sample number, matrix, location, sampling date, and laboratory analyses for each sample. During the course of the 19 station investigations, several common laboratory and/or sampling contaminants were found including: acetone, methylene chloride, 2-butanone, carbon disulfide, toluene, di-n-butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, and butyl benzyl phthalate. The determination to delete or include these analytes in a report was made on a sample-by-sample basis during the QA and data usability review.

Analytes detected in samples at less than five times the levels measured in the corresponding trip and/or rinsate blanks are tabulated but not discussed in the text. All analytical results are included in Appendix C. The following subsections include summary tables of analytes found in samples, including background and duplicate samples, collected at the Annette Island FAA Station.

5.2.1 Metal Analyses for Soil Samples

Results of metals analyses performed are presented in Table 5-3. Only target analytes detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

5.2.2 VOC Analyses for Soil Samples

Results of VOC analyses performed are presented in Table 5-4. Only compounds detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

5.2.3 Base/Neutral Extractable Analyses for Soil Samples

Results of B/N extractable analyses performed are presented in Table 5-5. Only compounds detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

5.2.4 Other Compound and Petroleum Hydrocarbon Analyses for Soil Samples

No organophosphorus pesticides were detected in soil samples (see Table 5-6). A complete summary of analytical data can be found in Appendix C. No chlorinated herbicides were detected in soil samples (see Table 5-6). A complete summary of analytical data can be found in Appendix C.

Results of Pesticide/PCB analyses performed are presented in Table 5-6. Only analytes detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

Results of EPH, VPH, and TRPH analyses performed are presented in Table 5-6. Only analytes detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

5.2.5 PCB Analyses for Rectifier and Transformer Oil Samples

Results of PCB analyses performed for oil samples are presented in Table 5-7. Only target analytes detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

5.2.6 Dioxin/Furan Analyses for Soil Samples

Results of dioxin/furan analyses performed are presented in Table 5-8. Only analytes detected in at least one sample were placed in the table. A complete summary of analytical data can be found in Appendix C. Sample results are discussed in Section 6.

5.3 FIELD QUALITY ASSURANCE SAMPLES

5.3.1 Trip Blank

One VOC trip blank (sample FAA-ANN-SV-031) was prepared in Anchorage, Alaska, and consisted of two 40-milliliter (mL) vials of deionized, organic-free water. The trip blank was shipped with the sample bottles to the Annette Island FAA Station prior to the sampling event and reflects the level of contamination from all sources except ambient field conditions. The following analyte was detected: carbon disulfide at 6 μg/L. The presence of this compounds may be attributed to common laboratory and/or sampling contamination. A summary of trip blank analytical data can be found in Appendix C.

5.3.2 Rinsate Blank

Sampling equipment was dedicated to each sampling location and was decontaminated following FAA Generic Work Plan guidance in Anchorage, Alaska, prior to the commencement of field activities. One rinsate blank, FAA-ANN-SV-001, was prepared from the deionized, organics-free water used in the final rinse of decontaminated sampling equipment. One dioxin/hexane rinsate blank, FAA-ANN-SV-032, was also prepared from a portion of the final hexane rinse used in decontamination procedures. Rinsate blanks reflect contaminants not removed during decontamination of dedicated sampling equipment, residual sample bottle contamination, and contaminants introduced as a result of analytical laboratory procedures.

Sample FAA-GAL-SV-006 was analyzed for VOCs, B/N extractables, pesticides/PCBs, organophosphorus pesticides, chlorinated herbicides, and metals. Analyses indicated the presence of chloroform (8 μg/L), which is a common laboratory contaminant.

Sample FAA-ANN-SV-032 was analyzed for dioxin/furans. Trace levels of: 2,3,7,8-TCDF (0.047 ng/L); total TCDF (0.079 ng/L); total HxCDF (0.025 ng/L); 1,2,3,7,8,9 HxCDF (0.025 ng/L); 1,2,3,4,6,7,8 HpCDD (0.039 ng/L); total HpCDD (0.039 ng/L) and OCDD (0.490 ng/L) was selected. The total 2,3,7,8-TCDD equivalence (using EPA 8290 factors) is 0.0050 ng/L (EPA 1986).

5.3.3 Background Sample

One background soil sample was collected during the Annette Island FAA Station investigation to establish natural soil conditions as a baseline reference with which to compare analytical data for potentially contaminated samples.

Sample FAA-ANN-SV-016 was collected from visibly uncontaminated soil at the VORTAC facility in native Muskeg 200 feet west of the RCAG facility. This sample was submitted for VOC, B/N, pesticides/PCBs, organophosphorus pesticides, chlorinated herbicides, dioxin/furans, and metals analyses. The following metals with associated concentrations are

considered for this report as representative of local natural background conditions: lead (21 mg/kg), and zinc (8 mg/kg).

Toluene (9.2 μg/kg) and VPH (tentatively identified at an estimated concentration of 31 mg/kg) were detected in this background sample.

Trace concentrations of several dioxin congeners were present in the sample (see Table 5-8). The total 2,3,7,8-TCDD Equivalence (using EPA 8290 factors) is 0.105 ng/kg. Several of these dioxin concentrations are at or near the instrument detection limits, and were also detected in the dioxin/hexane rinsate blank.

5.3.4 Field Duplicate Sample

One field duplicate soil sample, FAA-ANN-SV-018, was collected during the Annette Island FAA Station investigation. This sample was collected concurrently with soil sample FAA-ANN-SV-017, which was collected at the NDB/H-Marker facility. Field duplicates may be employed to provide an estimate of spatial/sampling variability in contaminant distribution together with laboratory analytical precision.

The duplicate sample was analyzed for the same parameters as the original sample. In general, duplicate sample results showed limited variability with original sample results.

A duplicate oil sample, FAA-ANN-SV-023, was collected currently with sample FAA-ANN-SV-022 from Westinghouse Transformer No. 3 at the Hangar facility. No PCBs were detected in either sample.

Table 5-1

SUMMARY OF ANALYTICAL METHODS
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Parameter	Method
Priority Pollutant Furnace Metals[a]	SW 7060, 7421, 7740, and 7841
Mercury	SW 7471
Inductively Coupled Argon Plasma Metals[b]	SW 6010
Total Recoverable Petroleum Hydrocarbons	EP 418.1 Modified[3] - soils; EP 418.1 - water
Volatile Organic Compounds	SW 8240
Base/Neutral Extractables	SW 8270
Pesticides/Polychlorinated Biphenyls	SW 8080
Organophosphorus Pesticides	SW 8140
Chlorinated Herbicides	SW 8150
Dioxin/Furans	SW 8290
Volatile Petroleum Hydrocarbons	SW 8015 Modified[1]
Extractable Petroleum Hydrocarbons	SW 8100 Modified[2]

[a] Includes arsenic, lead, selenium, and thallium.
[b] Includes antimony, beryllium, cadmium, chromium, copper, nickel, silver, and zinc.

Key:

SW = Test Methods for Evaluating Solid Wastes, SW-846, EPA, September 1986.
EP = Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020 revised March 1983.
modified[1] = Method for Determination of Gasoline Range Organics, Revision 4, November 2, 1990.
modified[2] = Method for Determination of Diesel Range Organics, Revision 4, November 2, 1990.
modified[3] = Used SW3550 extraction.

Table 5-2

SAMPLE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Sample Number FAA-ANN-SV-	Matrix	Location	Sampling Date	Laboratory Analyses
001	Water	Rinsate - Prepared in Anchorage	07/31/91	VPH, EPH, TRPH
002	Oil	Rectifier in VORTAC, Serial No. 689	08/05/91	PCB
003	Oil	Rectifier in VORTAC, Serial No.690	08/05/91	PCB
004	Soil	South side of VORTAC, next to transformer and stressed vegetation	08/05/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb
005	Soil	West side of VORTAC, under UST fill spout	08/05/91	Metals, VOC, B/N, Pest/PCB, EPH, VPH, TRPH
006	Soil	South side of VORTAC at two locations of observed stressed vegetation	08/05/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb
007	Oil	Glide slope at transformer on south side of building	08/05/91	PCB
008	Oil	Rectifier in RCAG	08/06/91	PCB
009	Oil	Rectifier in RCAG	08/06/91	PCB
010	Oil	Rectifier in RCAG	08/06/91	PCB
011	Oil	Rectifier in RCAG	08/06/91	PCB
012	Oil	Rectifier in RCAG	08/06/91	PCB
013	Oil	Rectifier in RCAG	08/06/91	PCB

Key at end of table.

Table 5-2

SAMPLE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Sample Number FAA-ANN-SV-	Matrix	Location	Sampling Date	Laboratory Analyses
014	Soil	RCAG UST/east side of Building 408	08/06/91	Metals, VOC, B/N, Pest/PCB, VPH, TRPH, EPH
015	Soil	RCAG between tower and transformer	08/06/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb
016	Soil	Background Sample, RCAG, 200 feet west of Building 408	08/06/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb, Dioxin/Furans, EPH, VPH, TRPH
017	Soil	NDB, burned debris and stressed vegetation near former NDB Building foundation	08/06/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb, Dioxin/Furans
018	Soil	NDB, duplicate of -017	08/06/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb, Dioxin/Furans
019	Soil	NDB, stressed vegetation next to tower	08/06/91	Metals, VOC, B/N, Pest/PCB, OP-Pest, Cl-Herb, Dioxin/Furans
020	Oil	Hangar, Westinghouse Transformer 1 (No serial number visible)	08/06/91	PCB
021	Oil	Hangar, Westinghouse Transformer 2 (No serial number visible)	08/06/91	PCB
022	Oil	Hangar, Westinghouse Transformer 3 (No serial number visible)	08/06/91	PCB
023	Oil	Duplicate of -022	08/06/91	PCB

Key at end of table.

Table 5-2

SAMPLE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Sample Number FAA-ANN-SV-	Matrix	Location	Sampling Date	Laboratory Analyses
024	Oil	Hangar, GE Transformer 4, Serial No. 6899137	08/06/91	PCB
025	Oil	Hangar, GE Transformer 5, Serial No. 6899138	08/06/91	PCB
026	Oil	Hangar, GE Transformer 6, Serial No. 6899136	08/06/91	PCB
027	Oil	Hangar, GE Transformer 7, Serial No. 9980708	08/06/91	PCB
028	Oil	Hangar, GE Transformer 8, circuit selector switch	08/06/91	PCB
029	Oil	Hangar, GE Transformer 9, Serial No. 9979656	08/06/91	PCB
030	Oil	Transformer at ATCT	08/06/91	PCB
031	Water	Trip Blank-prepared in Anchorage	08/06/91	VOC
032	Liquid	Hexane rinsate-prepared in Anchorage	08/06/91	Dioxin/Furans

Key at end of table.

Table 5-2 (Cont.)

Key:

ATCT = Air traffic control tower.
B/N = Base neutral extractable.
Cl-Herb = Chlorinated herbicide.
Dioxin = Dioxin/Furans.
EPH = *Extractable petroleum hydrocarbon.*
Metals = All metals parameters and mercury.
NDB = Nondirectional Beacon.
OP-Pest = Organophosphorus pesticide.
Pest/PCB = Chlorinated pesticide/polychlorinated biphenyl.
RCAG = Remote center air/ground communications facility.
UST = Underground storage tank.
VOC = *Volatile organic compound.*
VORTAC = VHF omnidirectional range tactical air navigation.
VPH = Volatile petroleum hydrocarbon.
TRPH = Total recoverable petroleum hydrocarbon.

Key at end of table.

Table 5-3

METAL ANALYSES FOR SOIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(mg/kg)

Sample Number	FAA-ANN-SV-004	FAA-ANN-SV-005	FAA-ANN-SV-006	FAA-ANN-SV-014	FAA-ANN-SV-015
Arsenic	12 J	2.2	ND	1.4	ND
Cadmium	5.9	8.2	ND	ND	1.8
Chromium	70	76	18	9.3	3.9
Copper	77	19	5.2	14	4.1
Lead	3,900	1,100	60	12 J	23 J
Mercury	ND	1.1	0.12	ND	ND
Nickel	310	640	140	8.4	3.8
Zinc	1,000	300	45	47	39

Key at end of table.

Table 5-3

METALS ANALYSES FOR SOIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(mg/kg)

Sample Number	FAA-ANN-SV-016 (Background)	FAA-ANN-SV-017	FAA-ANN-SV-018 (Duplicate of -017)	FAA-ANN-SV-019
Arsenic	ND	26 J	14 J	4.0 J
Cadmium	ND	3.3	2.1	2.7
Chromium	ND	440	82	170
Copper	ND	200	68	17
Lead	21 J	9,500	2,800	1,100
Mercury	ND	0.17	0.17	ND
Nickel	ND	38	15	100
Zinc	8.0	2,500	1,600	250

Key:

J = The material was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample. The data should be seriously considered for decision-making and are usable for many purposes.

ND = Not detected.

Table 5-4

VOLATILE ORGANIC COMPOUND ANALYSES FOR SOIL
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(µg/kg)

Sample Number	FAA-ANN-SV-004	FAA-ANN-SV-005	FAA-ANN-SV-006	FAA-ANN-SV-014	FAA-ANN-SV-015	FAA-ANN-SV-016 (Background)	FAA-ANN-SV-017	FAA-ANN-SV-018 (Duplicate of -017)	FAA-ANN-SV-019
Toluene	22	ND	2.1 J	12 J	ND	9.2 J	32 J	28 J	2.4 J
4-Methyl-2-pentanone	2.8 J	ND	ND	ND	ND	R	R	R	ND

Key:

J = The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample. The data should be seriously considered for decision-making and are usable for many purposes.
R = Quality control information indicates that data are unusable for any purpose. The analyte was analyzed for, but the presence or absence of the analyte has not been verified.
ND = Not detected.

Table 5-5

BASE/NEUTRAL ANALYSES FOR SOIL SAMPLES ANNETTE ISLAND FAA STATION TASK ORDER NO. 4 ANNETTE ISLAND, ALASKA AUGUST 1991 (µg/kg)

Sample Number	FAA-ANN-SV-004	FAA-ANN-SV-005	FAA-ANN-SV-006	FAA-ANN-SV-014	FAA-ANN-SV-015
Phenanthrene	ND	ND	71 J	ND	320 J
Fluoranthene	51 J	ND	130 J	ND	430 J
Pyrene	77 J	72 J	97 J	ND	300 J
Benzo(a)anthracene	ND	ND	ND	ND	ND
Chrysene	ND	ND	96 J	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	80 J
Benzo(k)fluoranthene	ND	ND	48 J	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	210 J	ND	ND	ND

Key at end of table.

Table 5-5

BASE/NEUTRAL ANALYSES FOR SOIL SAMPLES ANNETTE ISLAND FAA STATION TASK ORDER NO. 4 ANNETTE ISLAND, ALASKA AUGUST 1991 (µg/kg)

Sample Number	FAA-ANN-SV-016 (Background)	FAA-ANN-SV-017	FAA-ANN-SV-018 Duplicate of -017	FAA-ANN-SV-019
Phenanthrene	ND	130 J	220 J	ND
Fluoranthene	ND	210 J	260 J	57 J
Pyrene	ND	180 J	220 J	53 J
Benzo(a)anthracene	ND	ND	70 J	ND
Chrysene	ND	88 J	130 J	ND
Benzo(b)fluoranthene	ND	ND	70 J	ND
Benzo(k)fluoranthene	ND	ND	42 J	ND
Benzo(a)pyrene	ND	ND	44 J	ND
Indeno(1,2,3-cd)pyrene	ND	46 J	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND

Key:

J = The material was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample. The data should be seriously considered for decision-making and are usable for many purposes.

ND = Not detected.

Table 5-6

OTHER COMPOUND AND
PETROLEUM HYDROCARBON ANALYSES FOR SOIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(mg/kg)

Sample Number	FAA-ANN-SV-004	FAA-ANN-SV-005	FAA-ANN-SV-006	FAA-ANN-SV-014	FAA-ANN-SV-015
Pesticide/PCB					
PCB-1254	ND	ND	ND	ND	ND
Organophosphorus Pesticides	ND	NA	ND	NA	ND
Chlorinated Herbicides	ND	NA	ND	NA	ND
Petroleum Hydrocarbons					
Extractable Petroleum Hydrocarbon (EPH) as Diesel	NA	ND	NA	ND	NA
Volatile Petroleum Hydrocarbons (VPH) as Gasoline	NA	ND	NA	ND	NA
Total Recoverable Petroleum hydrocarbons (TRPH)	NA	9.4	NA	20	NA

Key at end of table.

Table 5-6

OTHER COMPOUND AND PETROLEUM HYDROCARBON ANALYSES FOR SOIL SAMPLES ANNETTE ISLAND FAA STATION TASK ORDER NO. 4 ANNETTE ISLAND, ALASKA AUGUST 1991 (mg/kg)

Sample Number	FAA-ANN-SV-016 (Background)	FAA-ANN-SV-017	FAA-ANN-SV-018 (Duplicate of -017)	FAA-ANN-SV-019
Chlorinated Pesticide-PCB				
PCB-1254	ND	0.020 J	0.018 J	ND
Organophosphorus Pesticides	ND	ND	ND	ND
Chlorinated Herbicides	ND	ND	ND	ND
Petroleum Hydrocarbons				
Extractable Petroleum Hydrocarbons EPH as Diesel	ND	NA	NA	NA
Volatile Petroleum Hydrocarbons (VPH) as Gasoline	31 NJ	NA	NA	NA
Total Recoverable Petroleum hydrocarbons (TRPH)	ND	NA	NA	NA

Key:

J = The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the sample.
NA = Not analyzed for corresponding parameter.
NJ = The analysis indicates that the analyte has been tentatively identified and that the associated numerical value may not be consistent with the amount actually present in the sample.
ND = Not detected.

Table 5-7

PCB ANALYSES FOR RECTIFIER AND TRANSFORMER OIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(mg/kg)

Sample Number	FAA-ANN-SV-002	FAA-ANN-SV-003	FAA-ANN-SV-007	FAA-ANN-SV-008	FAA-ANN-SV-009	FAA-ANN-SV-010	FAA-ANN-SV-011
PCB-1242	ND	ND	ND	9.8 J	10 J	7.9 J	9.0 J
PCB-1254	15	12 J	ND	24 J	25 J	23 J	26 J
PCB-1260	ND	ND	ND	ND	ND	ND	ND

Key at end of table.

Table 5-7

PCB ANALYSES FOR RECTIFIER AND TRANSFORMER OIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(mg/kg)

Sample Number	FAA-ANN-SV-012	FAA-ANN-SV-013	FAA-ANN-SV-020	FAA-ANN-SV-021	FAA-ANN-SV-022	FAA-ANN-SV-023 Duplicate of -022	FAA-ANN-SV-024
PCB-1242	7.6 J	110 J	ND	ND	ND	ND	ND
PCB-1254	26 J	230 J	ND	ND	ND	ND	ND
PCB-1260	ND	ND	ND	ND	ND	ND	100,000 J

Key at end of table.

Table 5-7

PCB ANALYSES FOR RECTIFIER AND TRANSFORMER OIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(mg/kg)

Sample Number	FAA-ANN-SV-025	FAA-ANN-SV-026	FAA-ANN-SV-027	FAA-ANN-SV-028	FAA-ANN-SV-029	FAA-ANN-SV-030
PCB-1242	ND	ND	ND	ND	ND	ND
PCB-1254	ND	ND	ND	ND	ND	ND
PCB-1260	59,000 J	62,000 J	ND	9.3 J	ND	ND

Key:

J = The material was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.
ND = Not detected.

Table 5-8

DIOXIN/FURAN ANALYSES FOR SOIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(ng/kg)

Sample Number	FAA-ANN SV-016 (Background)	FAA-ANN SV-017	FAA-ANN SV-018 (Duplicate of -017)
2,3,7,8-TCDF	ND	7.7	2.30
Total TCDF	22.0	130.0	39.00
2,3,7,8-TCDD	ND	6.8	1.20
Total TCDD	5.6	92.0	12.00
1,2,3,7,8-PeCDF	ND	6.7	1.30
2,3,4,7,8-PeCDF	ND	9.4	1.50
Total PeCDF	ND	120.0	16.00
1,2,3,7,8-PeCDD	ND	31.0	4.70
Total PeCDD	ND	220.0	32.00
1,2,3,4,7,8-HxCDF	ND	26.0	1.90
1,2,3,6,7,8-HxCDF	ND	ND	0.61
1,2,3,7,8,9-HxCDF	ND	7.0	ND
2,3,4,6,7,8-HxCDF	ND	4.8	ND
Total HxCDF	1.5	360.0	11.00
1,2,3,4,7,8-HxCDD	ND	58.0	5.10
1,2,3,6,7,8-HxCDD	ND	140.0	14.00
1,2,3,7,8,9-HxCDD	ND	98.0	12.00
Total HxCDD	12.0	1,200.0	150.00
1,2,3,4,6,7,8-HpCDF	3.9	ND	10.00
1,2,3,4,7,8,9-HpCDF	ND	18.0	1.30
Total HpCDF	13.0	250.0	28.00

Key at end of table.

Table 5-8

DIOXIN/FURAN ANALYSES FOR SOIL SAMPLES
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991
(ng/kg)

Sample Number	FAA-ANN SV-016 (Background))	FAA-ANN SV-017	FAA-ANN SV-018 (Duplicate of -017)
1,2,3,4,6,7,8-HpCDD	18	6,500	350
Total HpCDD	18	11,000	620
OCDF	8	160	12
OCDD	130	25,000	1,400
Total 2,3,7,8-TCDD equivalence[a]	0.105[a]	46	6.05[a]

[a]Using EPA 8290 Factors.

Key:

ND = Not detected.

6. STATION EVALUATION AND RECOMMENDATIONS

This section discusses the evaluation of the Annette Island Station performed during this ECI. Section 6.1 discusses how E & E accomplished the objectives of the ECI. Section 6.2 describes the evaluation criteria used by E & E in determining its recommendations. Recommendations include no further action, further study/investigation, and remedial/removal action. Section 6.3 presents the findings and recommendations for each facility and site associated with the Annette Island FAA Station.

6.1 INVESTIGATION ACTIVITIES

The initial activity for the ECI was an extensive file search of FAA, BLM, USGS, State of Alaska Department of Transportation and Public Facilities (DOT-PF) files. This file search concentrated on station history, real estate issues, station geology, groundwater and surface water sampling results, climate, sensitive environments, facility and site history and operations, and potential and known sources of contamination. For facilities and sites formerly owned or operated by FAA, the beneficial use of the property by any owner since FAA was evaluated.

Selected FAA personnel were interviewed and the appropriate agencies contacted. The findings from the initial file search and interviews were used as the basis for the site visit plan (E & E 1991b). Areas of suspected contamination were identified during file searches and review of previous investigation data. While at the station, E & E personnel evaluated potential and known sources of contamination.

Proposed field activities included the collection of nine soil, oil, and water samples. Sample collection was modified, with the approval of FAA COR Garth Bayette, following inspection of the site conditions. The number of samples collected was changed to 9 surface soil samples and 20 oil samples. These modifications were made to address specific conditions found at the FAA station.

The site visit was scheduled and the E & E team and FAA COR mobilized to Annette Island on August 4, 1991. E & E personnel who evaluated the Annette Island FAA Station included Dave Franzen (Team Leader) and Annette Sackman (Sampler and Site Safety Officer).

A summary of all samples collected at the Annette Island Station is presented in Table 5-2. Samples collected were analyzed for selected analytes including: pesticides/PCBs; VOCs; B/N extractables; organophosphorus pesticides; chlorinated herbicides; petroleum hydrocarbons; and metals. In addition, certain samples were also analyzed for dioxin/furans. All analyses other than dioxin/furans were performed by E & E's Analytical Services Center (ASC) in Buffalo, New York. Samples for dioxin/furans analysis were sent to Twin Cities Testing in St. Paul, Minnesota.

During the course of the ECI, E & E personnel addressed the questions in the EPA questionnaires "Preliminary Assessment/Site Investigation Data Requirements for Federal Facility Docket Sites" for the Annette Island Station (see Appendix A).

In addition to the sampling of potentially contaminated areas, a THM survey was performed to develop a list of hazardous materials present at the station. The results of the survey are presented in Table 6-1. Electrical equipment found during the survey is presented in Appendix E.

During the site visit other potential compliance issues, aside from CERCLA and POL concerns and management practice concerns were noted.

The findings and recommendations from the site investigation are discussed in Section 6.3.

6.2 EVALUATION CRITERIA

This section presents a detailed discussion of the evaluation criteria used to determine recommendations.

One of the main components of the ECI program was the collection and analysis of samples from various media to determine the presence of chemicals of potential concern. The sampling plan was designed to evaluate those areas having the greatest potential for contamination. Appropriate regulatory standards, if available, were used to evaluate the data generated. EPA Maximum Contaminant Levels (MCLs) for drinking water were used to evaluate groundwater and surface water.

In the absence of regulatory standards, generally accepted regulatory guidance values were selected for initial data evaluation. ADEC guidance values for POL-contaminated soil from non-UST sites were used. ADEC numerical values (i.e., background levels) were not used to evaluate the need for further action where nonpetroleum-based hazardous substances were identified. Instead, risk-based regulatory guidance values (see below) were developed to evaluate the need for further action. This approach is consistent with ADEC soil cleanup guidance. EPA guidance values were used to evaluate PCBs, dioxins, and lead in soil and sediment samples.

In the absence of any formally sanctioned regulatory or guidance criteria for specific analytes, E & E developed criteria utilizing the proposed EPA approach for further investigation at waste sites subject to Resource Conservation and Recovery Act (RCRA) corrective measures study (CMS) action levels. Modifications to these values have been used to more accurately reflect specific circumstances in Alaska.

If analytical results from the station investigation met or exceeded the developed action criteria, further evaluation of the data was deemed appropriate. Further evaluation of the data considered not only the level of contaminant detected, but local climate, proximity of the facility to populated areas, accessibility to site contaminants, areal extent of contamination, and the toxicological basis for the specific criterion. The receptor evaluation presented in Section 7 has been employed in this evaluation. Evaluation criteria and their source are listed in Tables 6-2 and 6-3.

Where no samples were taken, E & E relied on site-specific information and its best professional judgment to formulate its recommendations in Section 6.3.

6.2.1 Existing Regulatory Standards

EPA MCLs

MCLs were developed by EPA based on the assumption that the water being considered would be used for drinking water and consumed continuously over the course of a lifetime (40 CFR 141). Under the circumstances associated with the FAA stations, it was assumed that the water sampled will not be consumed continuously over a lifetime by any individual. MCLs were instead utilized as action levels for further evaluation. Those facilities or sites containing analytes exceeding MCLs were considered for further evaluation.

6.2.2 Regulatory Guidance Values

ADEC POL Values

ADEC criteria for cleanup of non-UST contaminated soils were utilized for POL constituents covered by ADEC guidance. The most stringent guidance (Level A) for EPH, VPH, benzene, and BTEX was used as a threshold action level for further evaluation. Any analytes exceeding these criteria were flagged for further evaluation using the ADEC Matrix Score Sheet (ADEC 1991).

In these instances, analytical results and other factors such as depth to subsurface water, mean annual precipitation, soil type, potential receptors, and estimated volume of contaminated soil were entered into the ADEC Matrix Score Sheet (see Appendix G). The resulting score was entered into the ADEC matrix which indicates the recommended ADEC cleanup level.

The matrix score sheet cleanup level is a guideline; guidance states that varying cleanup levels may be approved for different regions due to dissimilar environmental conditions that are not taken into account by the matrix. Where concentrations of petroleum constituents in the soil exceeded the matrix cleanup level, a cleanup may be required and further investigation has been recommended. In any event, additional sampling may be necessary to determine the range of concentrations and extent of contamination.

In instances when EPH, VPH, benzene, or BTEX did not exceed the evaluation criteria but TRPHs were detected, TRPH results were compared to the recommended ADEC cleanup level for residual range petroleum hydrocarbons (i.e., 2,000 mg/kg). When TRPH concentrations exceed this ADEC guidance cleanup level, a cleanup may be required and further study and/or investigation has been recommended. Additional sampling may be necessary to further confirm the concentrations and extent of contamination.

EPA PCB Value

Soil contamination from spills or leakage of PCBs from transformers or other oil-filled electrical equipment is a potential cause of concern at FAA facilities. EPA guidance on the subject of cleanup varies depending upon specific factors associated with the PCB release (40 CFR 761.125).

For the evaluation of PCBs in soils, the criterion of 25 ppm has been utilized to determine the need for further evaluation of site-specific conditions.

EPA Dioxin Values

Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are classes of chemical compounds containing toxic congeners. PCDDs and PCDFs are products of incomplete combustion of organic compounds in the presence of a chlorine source as well as contaminants generated during the manufacture of certain chlorinated organic chemicals. Of its 75 congeners, 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) is accepted as the most toxic of this series of compounds. After much study, EPA has scaled the toxicity of all other PCDDs and PCDFs to the toxicity of 2,3,7,8-TCDD by assigning toxicity equivalence factors to various PCDD and PCDF congeners. This scaling procedure allows for estimation of toxicity of all PCDDs and PCDFs identified at a site and is reported as total 2,3,7,8-TCDD equivalence (EPA 1986).

The base action level for 2,3,7,8-TCDD in a residential soil exposure situation is 0.001 mg/kg. This criterion has been chosen for evaluation of the analytical results associated with total 2,3,7,8-TCDD equivalence and considers the fact that there may be potential variability in reported PCDD and PCDF levels since sampling was very limited and exposures are most likely to be much less than those used to establish this benchmark level.

EPA Lead Value

The EPA has issued interim guidance on the cleanup of lead-contaminated soil (EPA 1990). The interim guidance suggests that the cleanup goal ranges from 500 to 1,000 mg/kg. This range of cleanup is guidance, and EPA has determined that site-specific cleanup should be evaluated on a case-by-case basis. For soils at FAA sites, a lead level of 500 mg/kg has been chosen as the threshold above which further investigation would be required. Those facilities and sites with lead levels in soil exceeding this criterion were flagged for further investigation based on the fact that sampling for lead was very limited, access to contaminated soil may be very limited, and areal extent of contamination is unknown.

6.2.3 Calculated Guidance Criteria

Corrective Measures Study (CMS) Action Levels

In the absence of any other regulatory guidance for evaluating data collected at FAA sites, the only other EPA procedure, short of a formal compound-specific risk assessment for evaluating soil, water, and air associated with waste disposal, is use of the proposed RCRA CMS action levels (EPA 1991a, 1991b). According to the proposed EPA rulemaking, if the proposed action level is exceeded, further investigation is needed. Since decision criteria were needed for evaluating further action in this specific situation, the proposed EPA CMS procedure for calculating action levels was used for this project. However, EPA utilizes the following conservative assumptions in determining these CMS action levels:

- In deriving action levels for hazardous substances in groundwater, assume a water intake of 2 liters per day for a 70-kg adult for a 70-year lifetime exposure period;
- In deriving action levels for hazardous substances in air, assume air intake of 20 cubic meters per day for a 70-kg adult for a 70-year lifetime exposure period;
- In deriving action levels for hazardous substances in soil that are known or suspected carcinogens, assume soil intake of 0.1 gram per day for a 70-kg adult for a 70-year lifetime exposure period;
- In deriving action levels for hazardous substances in soil, other than those which are known or suspected carcinogens, assume soil intake of 0.2 grams per day for a 16-kg child for a 5-year exposure period (age 1-6); and
- In deriving action levels for hazardous substances in surface water designated by the state for use as a drinking water source, assume a water intake of 2 liters per day for 70-kg adult for a 70-year lifetime exposure period, unless intake of aquatic organisms is also of concern.

These assumptions have been used in combination with EPA established reference doses (RFD) or carcinogen slope factors (CSF) in calculating an action level. If an analyte is detected but there is no RFD or CSF, other available published literature providing information on acceptable daily intakes (ADIs) has been used. If data are not available on ADIs, information on similarly structured compounds has been used. This occurs in the case of polynuclear aromatic hydrocarbons (PAHs) where there are numerous PAHs with no RFD or CSF. For carcinogenic PAHs, benzo(a)pyrene has been used as the model compound; for noncarcinogenic PAHs, naphthalene has been used as the model for compounds with two aromatic rings, and anthracene for noncarcinogenic compounds with three aromatic rings.

The unique nature of the Alaskan climate and the fact that FAA facilities are not used as permanent residences will also have an impact on potential risks associated with chemical contamination at various facilities and sites. Therefore, CMS action level based criteria have been modified to more closely reflect specific conditions at FAA stations (see Table 6-3). The soil action criteria are multiplied by four. This reflects the fact that soil exposure will be limited by weather to six months annually and that contaminants are not found on residential property. Also, since potential exposure to contaminated soil will be limited only to the time when a person is at a FAA site/facility, it is estimated that 50% of total soil ingested by an individual would be contaminated.

6.3 FINDINGS AND RECOMMENDATIONS

This section presents significant station findings and recommendations concerning CERCLA and POL regulatory compliance as well as other compliance issues and management practices of concern. Facilities and sites are described in Section 3, and sampling results are presented in Section 5.

As stated in Sections 5.2 and 6.2, the sampling rationale was biased to sample the facilities and sites determined to have the greatest potential for contamination. The sample results as listed in Section 5 indicate limited contamination, and only those results that exceed the criteria established in Section 6.2 are discussed in this section.

6.3.1 FAA-Owned Property

There are no FAA-owned properties at the Annette Island FAA Station.

6.3.2 FAA-Leased Facilities

6.3.2.1 CERCLA Concerns

Lead was detected at concentrations exceeding evaluation criteria in composite surface soil samples taken at the VORTAC facility and the NDB/H-Marker facility. Although lead contamination is often associated with POL spills, there was no evidence of POL contamination

sources in these areas. Sample FAA-ANN-SV-004 was collected from an area of stressed vegetation (approximately 50 square feet in area) in the VORTAC facility near the live MPL transformer located within the fenced area beside Building 413 (see Figure 3-3). Sample FAA-ANN-SV-017 was collected from an area of stressed vegetation and burned debris around the former NDB building (see Figure 3-4). Sample FAA ANN-SV-019 was collected in an area of stressed vegetation in the NDB transmitter tower (see Figure 3-4). It is recommended that further investigation be performed in each of these areas to further characterize the extent of soil contamination.

No other evidence of potential hazardous substance contamination above the evaluation criteria was identified in any of the other samples collected.

6.3.2.2 POL Concerns

POL concerns at FAA-leased facilities can be classified as Tank Management and Spilled Product concerns.

Tank Management

ASTs and USTs owned and managed by FAA were identified at the VORTAC facility (two USTs and one AST) and RCAG facility (one UST). A description of each tank can be found in Table 6-1. The tanks should be evaluated for compliance with ADEC and EPA registration and management standards and also should be incorporated into the FAA Alaskan Region Tank Management Plan (Order AL 1050.15).

Spilled Product

A composite surface soil sample, FAA-ANN-SV-005, was collected from beneath the fill port of the 1,000-gallon UST at the VORTAC facility (see Figure 3-3). This sample exceeded evaluation criteria for lead. Since lead is commonly associated with petroleum products, it is suspected that the lead contamination at this location is due to a POL release even though threshold evaluation criteria for POLs in this same sample were not exceeded. Further investigation is recommended to determine the extent of contamination in this area.

6.3.2.3 Other Compliance Issues/Management Practices of Concern

Asbestos-Containing Material (ACM)

Suspected ACM was identified at the VORTAC, RCAG, and NDB facilities. The results of the asbestos survey are summarized in Table 6-1.

Suspected ACM at the VORTAC facility (Building 413) includes a vibration gasket on a Honeywell centrifugal ventilator and 12-inch by 12-inch floor tile. Suspected ACM at the

RCAG facility (Building 408) includes 12-inch by 12-inch and 9-inch by 9-inch floor tile. Suspected ACM at the NDB facility (Building 407) includes 12-inch by 12-inch floor tile.

Further investigation is required to positively identify suspected ACM. If ACM is positively identified, it should be managed under the FAA Asbestos Management Order (AL 1050.3).

Electrical Equipment

Two inactive rectifiers are currently stored at the VORTAC facility. Although laboratory results indicate that PCBs are present in both rectifiers, neither had PCB concentrations exceeding the TSCA regulatory limit of 50 ppm. A best management practice would be to remove and dispose of the rectifiers if they no longer have a use.

Six inactive capacitors are currently stored in the RCAG Building. The oil in one of these transformers (sample FAA-ANN-SV-013) was found to exceed the Toxic Substance Control Act (TSCA) regulatory limit of 50 ppm. This transformer should be managed and/or disposed of in accordance with TSCA regulations. The other five capacitors should also be removed and disposed of if they no longer have a use.

In addition, two active transformers that were not sampled for PCBs were identified at the NDB/H-Marker facility. One, located on the west side of the road, had a "No PCB" label on it. The other, located at the base of the tower did not. It is recommended that this transformer be sampled for PCBs. If PCBs are detected above the TSCA regulatory limit of 50 ppm, the equipment should be managed and/or disposed of in accordance with TSCA regulations.

Toxic and Hazardous Materials (THM) Survey

A THM survey was performed at the Annette Island FAA Station. The results of the survey appear in Table 6-1. Several potential THM were identified in VORTAC and RCAG facilities. Stored materials include batteries, paints, solvents, antifreeze, motor oil, cleaners, and other miscellaneous maintenance materials. It is recommended that management/ housekeeping practices should be established to regularly update the inventory of THM and determine if any are appropriate for disposal.

Drums

Abandoned drums were identified at the RCAG and VORTAC facilities. Thirteen 55-gallon drums were identified in the vicinity of the RCAG facility. All the drums appeared to be rusted, bunged, and empty. Eight drums were located in heavy brush approximately 100 feet east of Building 408. One drum was found near the base of the north tower. Four additional drums, with lids missing, were found east of the road approximately 100 feet north of the living quarters-west. One empty, rusted, partially submerged 55-gallon drum also was

located near the VORTAC facility. It is recommended that these drums be collected and stored in a secure area pending disposal.

6.3.3 Other Properties

Concerns that are identified in this section are associated with formerly leased FAA properties which have been determined to have received a subsequent beneficial use and have been included for action based on FAA's good neighbor policy. Because of the legal issues involved in determining the extent to which FAA and/or other parties are responsible for addressing these concerns it is recommended that FAA consult with legal counsel prior to proceeding with any further action recommended in this section.

6.3.3.1 CERCLA Concerns

CERCLA concerns were not evaluated at formerly leased FAA facilities at the Annette Island FAA Station because all facilities were determined to have received a beneficial use.

6.3.3.2 POL Concerns

POL concerns were not evaluated at formerly leased FAA facilities at the Annette Island FAA Station because all facilities were determined to have received a beneficial use.

6.3.3.3 Other Compliance/Management Practices of Concern

Electrical Equipment

Inactive transformers and/or electrical equipment were located at the following former FAA-leased facilities that have been subject to beneficial use by others: Hanger, ATCT, Glide Slope Transmitter (Building 405), Approach Lighting System, Middle Marker (Building 406) and Remote Receiver (Building 404) facilities. A summary of the quantity, description, serial numbers, and PCB analytical results (when available) of this equipment is presented in Table 6-1. It is recommended that electrical equipment at each of these facilities which has not been tested for PCBs be sampled. All equipment in which PCBs are found in excess of the TSCA regulatory limit of 50 ppm should be managed and disposed of in accordance with TSCA regulations. All non-PCB equipment should also be removed and disposed of if it can no longer be used.

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
VORTAC/DF ANTENNA FACILITY			
VORTAC Property			
• UST	500 gallons	Gasoline	A-3
• UST	1,000 gallons	Gasoline	--
• AGST empty and sealed	500 gallons	Gasoline	--
• Live high-voltage transformer	Unknown	PCB	A-16
• Submerged drum, partially rusted, open	Empty	Unknown	A-18
Building 413 HVAC System on East Side			
• ACM vibration gasket, Honeywell centrifugal ventilator (Serial No. 8000 6362)	--	Asbestos	A-4, A-8
Building 413 Electronics Room			
• Lead/acid auto batteries	8	Metals/acid	A-5
• Floor tile, 12-inch by 12-inch (light and dark brown flecks)	--	Asbestos	A-6
• Antifreeze	2 gallons	Ethylene glycol	A-7
• Glass cleaner	<1 gallon	Ammonia	--
• C & D batteries (lead/cadmium)	18	Metals/acid	A-7
• Storage cabinet inventory			
- Paint	<1 gallon	Metals/solvents	--
- Epoxy	<1 gallon	Phenols	--
- Lubricants	<1 gallon	Petroleum	--

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
- Electrical coating	<1 gallon	Solvent	--
- Solvent cement	<1 gallon	Solvents	--
- Penetrating fluid	<1 gallon	Petroleum	--
- Pipe cement	<1 gallon	Solvents	--
- Heat-resistant paint	<1 gallon	Metals/solvents	--
- Linseed oil	<1 gallon	Petroleum	--
- Polyamine resin	<1 gallon	Solvent	--
- Insecticide spray	<1 gallon	Pesticides	--
- Can (unknown contents)	<1 gallon	Unknown	--
- Spray paint	<1 gallon	Solvent/metals	--
- Lube oil	<1 gallon	Petroleum	--
- Small bridging transformers	2	PCB	--
- Termiline coaxial resistor (oil-filled, Serial No. 463A, Bird Electronic Corporation, Cleveland, Ohio, Model No. 8130)	1	PCB	A-10
- Large coaxial resistors (Serial No. 659, Model No. 8201 and Serial No. 1654, Model No. 8201)	2	PCB	A-9
- Small batteries	6	Metals/acid	--
- Solid State electronic equipment	--	--	--
- Paint	3 gallons	Metals/solvents	--

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
- Acetone	<1 gallon	Solvents	--
- Turpentine	<1 gallon	Solvents	--
- Floor cleaner	<1 gallon	Caustic	--
- Spare parts	<1 gallon	Petroleum	--
• Two high-voltage rectifiers (stored in corner of room); RTN equipment ground beacon Model No. RTB-2, Type FA 6230	5 gallon each	PCB	
Generator Room			A-12
• Marine batteries	4	Metals/acid	A-13
• Motor oil	12 quarts	Petroleum	--
• Auto parts	--	Petroleum	--
DF Property			
• Abandoned tank piping and valve box, submerged in swamp	1	None visible	A-20
RCAG			
Building 408			
• Floor tile, 12-inch by 12-inch (dark yellow/white)	--	Asbestos	--
• Floor tile, 9-inch by 9-inch (green/white)	--	Asbestos	D-3
• Rectifiers (ID No. ITTL Specs A2211080, capacitance 1.33 MFD, volts = 36 KVDC)			--

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
Serial Number			
A2211080	5 gallons	PCB	
A2211080	5 gallons	PCB	
A2211080	5 gallons	PCB	
A2211080	5 gallons	PCB	
A2211080	5 gallons	PCB	
A2211080	5 gallons	PCB	
• Sulfuric acid battery fluid	15 gallons	Acid	--
• Floor tile cement	1 gallon	Asbestos	--
• Paint thinner	1 quart	Solvents	--
Backup Generator Room			
• Soldering paste, Zn Cl	<1 gallon	Metals	--
• Exide marine batteries	4	Metals/acid	D-5
• Paint	3 gallons	Metals/solvents	--
• Antifreeze	1 gallon	Ethylene glycol	--
• Battery acid	1 gallon	Acid	--
• Radiator compound	<1 gallon	Acid	--
• Antiseize compound	<1 gallon	Solvent	--
• Lubricant spray	<1 gallon	Petroleum/solvents	--

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
Property			
• UST on east side Building 408 (ADEC No. 0-000 760-2)	500 gallon	Unleaded gasoline	D-6
• Storage shed (wood frame, tin roof construction)			
- One 55-gallon drum (bunged), labeled, Deveron White Gas	--	Petroleum	D-7
- Exide marine batteries	3	Metals/acid	--
- Elastomers, rusted containers	12 gallons	Solvents	--
- Adhesives, rusted container	20 gallons	Phenols	--
- Plastic fibre seal	5 gallons	Solvents	--
- Flashing sealant	15 tubes	Solvents	--
• 55-gallon drums, dumped in brush south of building; all are empty, rusted, and bunged	8 drums	Unknown	D-9
• 55-gallon drum, rusted, no top	1	Unknown	D-10
• East of housing area	--	--	A-27
- Remains of Quonset huts	--	--	--
- Numerous rusted 55-gallon drums	--	Unknown	A-27
- Abandoned fuel tanks. (250-gallon)		Petroleum	A-27
NDB/H-Marker Facility			
Property			A-21
• High-voltage transformer box at base of tower	Unknown	PCB	--

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
• 25 KVA transformer on west side of road.	Unknown	None	A-26
Building 407			
• Floor tile, 12-inch by 12-inch (white)	--	Asbestos	--
HANGAR			
Building First Floor			
• Transformers stored in room A on west side; sampled by E & E for the Army Corps of Engineers	--	--	B-16 to B-18
Serial Number **Sample Number**			
1. B56000 6 TR	--	PCB >50 mg/kg[b]	
2. 59SH2233 7 TR	--	None[b]	
3. 59SJ701 9 TR	--	None[b]	
4. 59SJ700 8 TR	--	None[b]	
5. 59SJ702 10 TR	--	None[b]	
6. 9855709 19 TR	--	PCB 38 mg/kg[b]	
7. 59SH2232 20 TR	--	PCB 40 mg/kg[b]	
8. 9868456 21 TR	--	None[b]	
9. B560002 22 TR	--	PCB >50 mg/kg[b]	
10. B560001 25 TR	--	PCB >50 mg/kg[b]	
11. 9863459 23 TR	--	None[b]	

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
12. 1964868 24 TR	--	None[b]	
13. C403693 26 TR	--	PCB >50 mg/kg[b]	
14. 1964867 28 TR	--	None[b]	
15. 9863458 27 TR	--	None[b]	
16. 7029198 18 TR	--	None[b]	
• Transformers stored in room A (see Figure 3-5) on west side of hanger	--	--	B-16 to B-18
17. 6-37919-1-100 --	Empty	--	
18. 731126993 17 TR	--	None[b]	
19. 2837629 --	--	--	
20. 36768187 16 TR	--	None[b]	
21. 74VB0B92009 15 TR	--	None[b]	
22. C42629 13 TR	--	PCB 34 mg/kg[b]	
23. 1913086 14 TR	--	None[b]	
24. 2838166 12 TR	--	PCB 20 mg/kg[b]	
25. FV312309 11 TR	--	None[b]	
• Transformers stored on west side of Hanger			
1. 1889111 2 TR	--	None[b]	

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
2. 6810927 1 TR	--	None[b]	
• Transformers in Room C of Hanger	--	--	B-16 to B-19
Serial Number			
1. 3263353	100 gallons	PCB <5 mg/kg[a]	
2. 3263301	100 gallons	PCB <5 mg/kg[a]	
3. 3133557	100 gallons	PCB <5 mg/kg[a]	
4. 6899137	40 gallons	PCB 100,000 mg/kg[a]	
5. 6899138	40 gallons	PCB 59,000 mg/kg[a]	
6. 6899136	40 gallons	PCB 62,000 mg/kg[a]	
• Transformers stored in Room B			
Serial Number			
7. 9980708	72 gallons	PCB <5 mg/kg[a]	
8. GE two-way circuit selector switch	40 gallons	PCB 9.3 mg/kg[a]	
9. 9979656	30 gallons	PCB <5 mg/kg[a]	
GLIDE SLOPE (BUILDING 405)			
• Building 405			
- Voltage stabilizers (Serial Nos. J9264 and J9258, Raytheon Corporation, Type W-6366 Mode of CAA)	2	PCB	D-33

Table 6-1

TOXIC AND HAZARDOUS MATERIAL (THM) SURVEY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA
AUGUST 1991

Material	Estimated Quantity	Suspected THM	Photo Number
- Large transformer next to building, full of oil and leaking, no identification except "ME" on top	30 gallons	PCB <5 mg/kg[b]	D-3
- Tower next to building: small transformer on top of building appears to be a dry model (SOLA Electric Company, Chicago, IL, Catalog No. 23-22-125, Type CVH-1)	--		D-3
ATCT			
• High voltage transformer (in transclosure at base of Tower)	30 gallons	PCB <5 mg/kg[b]	B-27
ALS			
• Five transformers per tower, FAA Order No. 1-3277-1, FAA 10556, 15 towers	75	PCB	A-34
• One small capacitor in orange box; no ID number	--	PCB	B-1
MIDDLE MARKER			
• Small transformers, Type A34REA	2 x <1 gallon	PCB	A-33
REMOTE RECEIVER			
- Rusted transformer (swamp north of Building 404)	Unknown	PCB	--

[a] E & E samples taken 8/6/91.
[b] 1985 USACE sampling results.

Table 6-2

MEDIA-SPECIFIC EVALUATION CRITERIA - WATER

Chemical	Value (mg/L)
EXISTING REGULATORY STANDARDS	
Inorganics	
Antimony	0.005 p
Arsenic	0.05[a]
Beryllium	0.001 p
Cadmium	0.005[b]
Chromium	0.05[a]
Copper	1.09 s
Lead	0.015[c]
Mercury	0.002
Nickel	0.1 p
Silver	0.05[a]
Thallium	0.001 p
Zinc	5.0 s
Organics	
Benzene	0.005
Benzo(a)Anthracene	0.0001 p
Benzo(a)Pyrene	0.0002 p
Benzo(b)Fluoranthene	0.0002 p
Benzo(g,h,i)Perylene	0.0002[d] p
Benzo(k)Fluoranthene	0.0002 p
Bromodichloromethane	0.1[e]
Chlorobenzene	0.1
Chlorodibromomethane	0.1[e]
Chloroform	0.1[e]
Chrysene	0.0002 p
Dibenzo(a,h)Anthracene	0.0003 p

Key at end of table.

Table 6-2

MEDIA-SPECIFIC EVALUATION CRITERIA - WATER

Chemical	Value (mg/L)
EXISTING REGULATORY STANDARDS (Cont.)	
Organics (Cont.)	
1,2-Dichlorobenzene	0.6
1,4-Dichlorobenzene	0.075
Ethylbenzene	0.7
Indeno(1,2,3-cd)Pyrene	0.0004 p
Polychlorinated Biphenyls (PCBs)	0.0005
Styrene	0.1
Tetrachloroethene	0.005
Toluene	1.0
1,2,4-Trichlorobenzene	0.009 p
2,4,5-Trichlorophenoxy Acetic Acid	0.01[a]
Trichloroethene	0.005
Xylenes (Total)	10
CALCULATED GUIDANCE CRITERIA	
Corrective Measures Study (CMS) Action Levels	
Organics	
Acenaphthene	2.1
Aldrin	0.0000021
Anthracene	10.5
alpha-BHC	0.000006
Chlorpyrifos	0.11
Diazinon	0.03
4,4'-DDD	0.0001
4,4'-DDE	0.0001
4,4'-DDT	0.0001
Fluoranthene	1.4

Key at end of table.

Table 6-2

MEDIA-SPECIFIC EVALUATION CRITERIA - WATER

Chemical	Value (mg/L)
CALCULATED GUIDANCE CRITERIA (Cont.)	
Corrective Measures Study Action Levels (Cont.)	
Organics (Cont.)	
Fluorene	1.4
Isophorone	0.09
Malathion	0.7
2-Methylnaphthalene	0.14[f]
Naphthalene	0.14
N-Nitrosodiphenylamine	0.007
Parathion	0.2
Phenanthrene	10.5[g]
Pyrene	1.1

Key:

a = State of Alaska MCL.
b = Effective 7/30/92.
c = Value is based upon action level in lieu of MCL.
d = Value is based upon MCL for benzo(a)pyrene.
e = Value is based upon MCL for total trihalomethanes.
f = Value is based upon reference dose for naphthalene.
g = Value is based upon reference dose for anthracene.
p = Proposed.
s = Secondary MCL.

Table 6-3 MEDIA-SPECIFIC EVALUATION CRITERIA - SOIL	
Chemical	**Value (mg/kg)**
REGULATORY GUIDANCE VALUES	
ADEC POLs	
Diesel Range	100
Gasoline Range	50
Benzene	0.1
Total BTEX	10
TRPH*	2,000
EPA Values	
PCBs	25
Dioxins	0.001
Lead	500
CALCULATED GUIDANCE CRITERIA	
Corrective Measures Study (CMS) Action Levels	
Inorganics	
Antimony	120
Arsenic	320
Beryllium	0.8
Cadmium	160
Chromium	320,000[a]/1,600[b]
Copper	11,872
Mercury	80
Nickel	8,000
Silver	800
Thallium	22.4[c]
Zinc	64,000
Organics	
Acenaphthylene	96,000[d]
Acenaphthene	19,200

Key at end of table.

Table 6-3

MEDIA-SPECIFIC EVALUATION CRITERIA - SOIL

Chemical	Value (mg/kg)
Organics (Cont.)	
Aldrin	0.16
Anthracene	96,000
Benzo(a)Anthracene	0.24[e]
Benzo(a)Pyrene	0.24
Benzo(b)Fluoranthene	0.24[e]
Benzo(g,h,i)Perylene	0.24[e]
Benzo(k)Fluoranthene	0.24[e]
alpha-BHC	0.4
gamma-BHC (Lindane)	2.0
Bromodichloromethane	21.6
Chlorobenzene	8,000
Chlorodibromomethane	332
Chloroform	400
Chlorpyrifos	960
Chrysene	0.24[e]
Diazinon	288
4,4'-DDD	12
4,4'-DDE	8
4,4'-DDT	8
Dibenzo(a,h)Anthracene	0.24[e]
1,2-Dichlorobenzene	28,800
Dibenzofuran	TBD
1,4-Dichlorobenzene	1,168
Fluoranthene	12,800
Fluorene	12,800
Indeno(1,2,3-cd)Pyrene	0.24[e]
Isophorone	8,000
Malathion	6,400
2-Methylnaphthalene	1,280[f]

Key at end of table.

Table 6-3

MEDIA-SPECIFIC EVALUATION CRITERIA - SOIL

Chemical	Value (mg/kg)
Organics (Cont.)	
Naphthalene	1,280
N-Nitrosodiphenylamine	400
Parathion	2,000
Phenanthrene	96,000[d]
Pyrene	9,600
Styrene	80,000
Tetrachloroethene	40
2,4,5-Trichlorophenoxy Acetic Acid	3,200
1,2,4-Trichlorobenzene	8,000
Trichloroethene	240

* TRPH evaluation criterion is to be used only if EPH, VPH, Benzene, or BTEX do not exceed their respective criterion.

Key:

a = As chromium III.
b = As chromium VI.
c = As thallium in soluble salts.
d = Value is based upon reference dose for anthracene.
e = Value is based upon the slope factor for benzo(a)pyrene.
f = Value is based upon reference dose for naphthalene.
TBD = To be determined

7. PRELIMINARY ASSESSMENT/SITE INVESTIGATION DATA REQUIREMENT FORM

This section focuses on information requested in EPA's "Preliminary Assessment/Site Investigation Data Requirements for Federal Facility Docket Sites" (see Appendix A) that was either not previously discussed in Sections 1 through 6 or was not presented in a format most responsive to EPA data requirement needs. Section 7.1 presents a description of hazardous substances identified at the Annette Island FAA Station that are present at three times background concentrations or are above the laboratory's reported quantitation limit if not found in the background sample. These analytes are presented only to satisfy this data requirement. EPA and the FAA should utilize the findings and recommendations found in Section 6.3 to evaluate the need for further investigation and/or action. Section 7.2 presents information on surface water, groundwater, air and on-site exposure pathways for potential contamination migration. Section 7.3 summarizes the major exposure pathways of potential concern.

7.1 WASTE DESCRIPTION

The wastes identified within the Annette Island FAA Station were associated with the three operating facilities: the VORTAC/DF antenna, the RCAG, and the NDB/H-Marker. All contaminants identified were in the soil matrix. Source information is summarized in Table 7-1. The highest contaminant levels were found in the burned remains of the original NDB building at the NDB/H-Marker facility. Lead, arsenic, chromium, copper, nickel, and zinc exceed three times the background level. Dioxin and furan concentrations greatly exceed background. The total TCDD concentration and the average TCDD equivalence value both exceed background by more than three times. Surface soil samples collected at the VORTAC and RCAG also contained elevated metals; zinc, nickel, chromium, copper, arsenic, and cadmium all exceed three times background in the VORTAC samples. At the RCAG, soil collected beneath the UST fill spout contained zinc at greater than three times background. No organophosphorus pesticides, chlorinated herbicides, or PCBs were detected at the Annette Island FAA Station.

7.2 POTENTIAL MIGRATION PATHWAYS

The pathways of greatest concern at the Annette Island FAA Station are the surface water migration and soil exposure pathways. The potential for contaminant migration is detailed in the following subsections.

7.2.1 Surface Water Pathway

Surface water in the vicinity of the FAA station primarily flows to the ocean (see Table 7-2). The nearest access point for overland surface water from the VORTAC Facility is northeast, approximately 1 mile at Tamgas Harbor. For the RCAG and NDB/H-Marker facilities, the nearest access point 1.25 miles to the west at Canoe Cove. Due to the flat topography of the southern end of the peninsula, it is difficult to determine the exact surface water drainage pathway; however, a flow route was approximated based on site reconnaissance.

The Annette Island climate is characterized by high precipitation. Frequent storms contribute to the high average annual precipitation of 115 inches, including an average annual snowfall of 61 inches (ADCRA 1984). No evidence of hazardous substance migration from the source areas was noted at the Annette Island FAA Station. Source containment is summarized in Table 7-3. A potential drainage route of surface water at the FAA stations can be found in Figures 3-3 and 3-4.

The surface soil encountered was composed of organic silt, peat, silt, sand, and gravel. The soil would be best described as moderately fine-textured soils with low infiltration rates.

Soil contamination could affect the wetlands found on the island via overland flow. However, the drinking water supply would not be affected by contamination from the FAA facilities. No known drinking water intakes are located within 15 miles downstream of the discharge point. The nearest community to the FAA station is Metlakatla, which lies approximately 5.25 miles north of the VORTAC and 5.75 miles north of the NDB/H-Marker and RCAG facilities. Based on the site reconnaissance, no residences are located downgradient of the facilities. Drinking water for the town of Metlakatla is supplied from Chester Lake, which is located at the northeast end of the Annette Island peninsula, upgradient of the airport and FAA station. Drinking water for the living quarters-west and other facilities located in the airport area is supplied from Yellow Lake. Yellow Lake is located north of and upgradient of the airport and FAA station (see Figure 3-1). Chester Lake and Yellow Lake are the drinking water reservoirs for the island. Both lakes are at least 100 feet higher in elevation than the FAA station.

Sensitive environments are summarized in Table 7-4. All of Annette Island is a federally designated Indian reservation.

The Tongass National Forest lies on Revillagigedo, Duke, Gravina Prince of Wales, and Harris islands, which surround Annette Island. Harris Island, which is located near Hotspur and

Duke islands, is nearest to the Annette Island FAA Station. Harris Island lies approximately 3.75 miles southeast of the NDB/H-Marker and RCAG facilities and 4.25 miles southeast of the VORTAC facility, across Tamgas Harbor. The national forest does not directly border Annette Island.

The Misty Fiords National Monument Wilderness lies on the mainland approximately 10 miles east of Annette Island across Revillagigedo Channel. The wilderness area does not directly border Annette Island.

Fishing and lumbering industries support the economy of the town of Metlakatla. A sizable fishing fleet exists in this area, and the only fish traps allowed in Alaska are used in this area. According to the 1989 preliminary Alaska commercial fisheries harvest and values, the commercial harvest for the state of Alaska in the southeastern region was: total salmon, 257,870 pounds; Annette Island trap, salmon, 500.26 pounds; gill net salmon, 9930.60 pounds; total herring harvest (in areas other than Seymour Canal, Sitka Sound, and Kah Shakes), 3,400 pounds; total shellfish harvest, 9,929 pounds; total groundfish landed for 1989 for all gears, 9162.5 pounds.

7.2.2 Groundwater Pathway

The groundwater pathway source containment for the Annette Island FAA station is presented in Table 7-5. In all cases, it was all sources (except surface impoundments, land treatment, containers and tanks) and no evidence of hazardous substance migration. No supply wells for drinking water or other uses exist on the island (see Table 7-6). The only evidence of an attempt to install a groundwater well was a test hole, which was drilled at the north end of the island. The test hole produced a small amount of water, but was not developed into a well. A description of the geology beneath the Annette Island FAA Station can be found in Section 4.1.

7.2.3 Air Pathway

Surface soil contamination was identified at the VORTAC/DF antenna and the NDB/H-Marker facilities. The potential, although remote, exists for generation of wind-blown dust from these areas.

The air pathway did not appear to be of concern due to a lack of dry soil and dust in the area, with annual precipitation at 115 inches.

Air pathways information for the PA/SI data requirements is summarized in Table 7-7. No evidence exists of a biogas release from any of the sources; therefore, gas containment was summarized as all situations except those specifically listed. The source is a spill area. The source type was contaminated soil in all cases. The contaminated surface soil was uncontained at all sources.

7.2.4 Soil Exposure Pathway

The soil exposure pathway is of concern at the VORTAC/DF antenna and NDB/H-Marker facilities due to the presence of surface soil contamination (see Section 7.1). See Section 6 for a complete description of soil contaminants found in each sample. The accessibility to each facility was determined from Table 8 of the PA/SI data requirements (see Table 7-8). All facilities were considered accessible with no public recreation use. It was estimated that there were four people working within 200 feet of affected facilities. The Living Quarters-West are located within 0.25 mile of the RCAG and NDB/H-Marker facilities, with a total population estimated to be 15.

The nearest target populations to the Annette Island FAA Station are categorized in Table 7-9. People potentially exposed to contaminants from FAA facilities at the Annette Island FAA Station would be limited to those working on site, those who live near the facilities (Living Quarters-West), and residents who occupy the facilities occasionally for recreation or other purposes. The population counts in distance intervals from the FAA facilities have been summarized in Table 7-9.

A small number of people live and work in the immediate vicinity of the FAA station. It was estimated that four people work periodically at each of the operating FAA facilities (see Table 7-10). The population living nearest to the FAA facilities occupies the Weather Bureau housing (living quarters-west), which is located between the RCAG and NDB/H-Marker facilities. Six buildings are located in the area, and, based on discussions with Weather Bureau personnel at the time of the site visit, the total population was 15. In addition, approximately 20 people use the PNA/WA building (located northeast of the hangar), 10 people work at the Weather Bureau office, and 10 work occasionally in the main storage area inside the hangar. The housing area-east at Crab Point, was vacant except for two buildings during the site visit. It was estimated that six people currently occupy housing in that area.

7.3 EXPOSURE PATHWAYS OF CONCERN

The soil exposure and surface water pathways appear to be the major pathways of concern to be considered in the PA checklist. On-site residents, on-site workers, and the population of Metlakatla (630) are the only target populations potentially affected by surface soil contamination at the Annette Island FAA station. Surface soil contamination could also affect neighboring wetlands (summarized in Table 7-4) via overland flow of surface water. In addition to wetlands, other sensitive environments identified were estuaries, spawning grounds, and Tongass National Forest.

Table 7-1

SOURCE INFORMATION
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Facility/Site	Dates of Operation	Use	Waste	Size of Source	Known Contaminants	Suspected Contaminants	Reference Map in Annette Island ECI Report
VORTAC/DF Antenna	Currently operated since 1969	Navigational aid	None known	50 feet^2	Lead	NA	Figure 3-3
RCAG	Currently operated since 1941	Navigational aid	None known	410 feet^2	Zinc, nickel, chromium, copper, arsenic, cadmium	NA	Figure 3-4
NDB/H-marker	Currently operated since 1941	Navigational aid	None known	1,000 feet^2	Lead, dioxins	NA	Figure 3-4

Note: This table answers Question 2 from the PA/SI Data Requirements.

Key:

NA = Not applicable.

Table 7-2

**SURFACE WATER BODIES WITHIN TWO MILES OF STATION
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA**

Surface Water Body	Surface Water Type	Average Annual Flow (cubic feet per second)
Tamgas Harbor	#8 Ocean	NA
Canoe Cove	#8 Ocean	NA
Reference Maps in Annette Island ECI Report Indicating Direction of Surface Water Drainage Figures 3-2 and 3-3.		

**DECISION CHART FOR SURFACE WATER TYPE
(for use in above table)**

	Water Body	Size
#1	River	Not applicable
#2	Small Pond	0 - 5 Acres
#3	Large Pond	5 - 500 Acres
#4	Small Lake	500 - 1,000 Acres
#5	Medium Lake	1,000 - 5,000 Acres
#6	Large Lake	5,000 - > Acres
#7	Great Lake	Not applicable
#8	Ocean (Salt Water)	Not applicable
#9	Mixing Area	Not applicable

Note: This table answers Question 8 from the PA/SI Data Requirements.

Key:

NA = Not applicable.

Table 7-3

SOURCE CONTAINMENT FOR THE SURFACE WATER PATHWAY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Source	Containment Type	References in Annette Island ECI Report
VORTAC/DF Antenna	No evidence of hazardous substance migration from the source areas existed, and neither of the following was present: (1) maintained engineered cover; or (2) functioning and maintained run-on control system and runoff management system.	Figure 3-3; Section 7.2.1
RCAG	No evidence of hazardous substance migration from the source areas existed, and neither of the following was present: (1) maintained engineered cover; or (2) functioning and maintained run-on control system and runoff management system.	Figure 3-4; Section 7.2.1
NDB/H-marker	No evidence of hazardous substance migration from the source areas existed, and neither of the following was present: (1) maintained engineered cover; or (2) functioning and maintained run-on control system and runoff management system.	Figure 3-4; Section 7.2.1

Note: See Table 2 of the PA/SI data requirements for description to insert into table.

This table answers Question 9 from the PA/SI data requirements.

Table 7-4

SENSITIVE ENVIRONMENTS
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Distance	Sensitive Environment
0 - ¼ Mile	Wetlands
¼ - ½ Mile	Wetlands
½ - 1 Mile	Wetlands
1 - 2 Miles	Wetlands, Estuaries, Spawning Grounds
2 - 3 Miles	Wetlands, Estuaries, Spawning Grounds
3 - 4 Miles	Wetlands, Estuaries, Spawning Grounds, Tongass National Forest

Note: This table answers Question 17 from the PA/SI Data Requirements.

Table 7-5

SOURCE CONTAINMENT FOR THE GROUNDWATER PATHWAY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Facility/Site	Source/Containment Type	References in Annette Island ECI Report
VORTAC/DF Antenna	All sources (except surface impoundments, land treatment, containers, and tanks). No liner.	Figure 3-3; Section 7.2.2
RCAG	All sources (except surface impoundments, land treatment, containers, and tanks). No liner	Figure 3-4; Section 7.2.2
NDB/H-Marker	All sources (except surface impoundments, land treatment, containers, and tanks). No liner.	Figure 3-4; Section 7.2.2

Note: See Table 1 of the PA/SI Data Requirements for description to insert into table.

This table answers Question 4 from the PA/SI Data Requirements.

Table 7-6

DRINKING WATER WELLS
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Drinking Water Well	Location	Depth of Well	Screening Interval	Depth Aquifer Encountered	Population Served	Average Annual Pumpage (for multiple-well municipal system)	Map Reference in Annette Island ECI Report
None	NA	NA	NA	NA	NA	NA	NA

Note: This table answers Question 5 from the PA/SI Data Requirements.

Key:

NA = Not applicable.

Table 7-7

SOURCE CONTAINMENT FOR GASEOUS SUBSTANCES, AND PARTICULATES, AND SOURCE TYPE
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Facility/Site	Reference in Report	Source/Containment Type for Gaseous Substances	Source Type Description	Source/Containment Type for Particulate Substances
VORTAC/DF Antenna	Figure 3-3; Section 7.2.3	All situations except those specifically listed. Source is a spill area.	Contaminated soil	Contaminated soil was uncontained.
RCAG	Figure 3-4; Section 7.2.3	All situations except those specifically listed. Source is a spill area.	Contaminated soil	Contaminated soil was uncontained.
NDB/H-Marker	Figure 3-4; Section 7.2.3	All situations except those specifically listed. Source is a spill area.	Contaminated soil	Contaminated soil was uncontained.

Note: This table answers Question 24 from the PA/SI Data Requirements.

Table 7-8

ACCESSIBILITY TO AREA OF OBSERVED CONTAMINATION
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Facility/Site	Accessibility	References in this Report
VORTAC/DF Antenna	#6	Figure 3-3
RCAG	#6	Figure 3-4
NDB/H-Marker	#6	Figure 3-4

DECISION CHART FOR ACCESSIBILITY
(for use in above table)

#1	Designated Recreation Area.
#2	Regularly Used for Public Recreation (e.g. fishing, hiking, softball).
#3	Accessible and Unique Recreational Area (e.g. vacant lots in urban areas).
#4	Moderately Accessible (may have some access improvements - e.g. gravel road), with Some Public Recreation Use.
#5	Slightly Accessible (e.g. extremely rural area with no road improvement), with Some Public Recreation Use.
#6	Accessible, with No Public Recreation Use.
#7	Surrounded by Maintained Fence or Combination of Maintained Fence and Natural Barriers.
#8	Physically Inaccessible to Public, with No Evidence of Public Recreation Use.

Note: This table answers Question 22 from the PA/SI Data Requirements.

Table 7-9

POPULATION DISTRIBUTION BY DISTANCE
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Distance	Total Number of People
Vortac/DF Antenna Facility	
0 - ¼ Mile	4
¼ - ½ Mile	0
½ - 1 Mile	0
1 - 2 Miles	61
2 - 3 Miles	0
3 - 4 Miles	0
RCAG Facility	
0 - ¼ Mile	15
¼ - ½ Mile	0
½ - 1 Mile	0
1 - 2 Miles	0
2 - 3 Miles	61
3 - 4 Miles	0
NDB/H-Marker Facility	
0 - ¼ Mile	0
¼ - ½ Mile	15
½ - 1 Mile	0
1 - 2 Miles	0
2 - 3 Miles	61
3 - 4 Miles	0

Table 7-10

PERSONS WITHIN 200 FEET OF SOURCE
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Facility/Site	Number of People Residing, Working, Attending School or Day Care Within 200 Feet of Source
VORTAC/DF Antenna	4
RCAG	4
NDB/H-Marker	4

Note: This table answers Question 20 from the PA/SI Data Requirements.

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APPENDIX A

EPA CERCLA
DIRECTIVE DOCUMENT

ENCLOSURE A

PRELIMINARY ASSESSMENT (PA)/SITE INSPECTION (SI)
DATA REQUIREMENTS
FOR FEDERAL FACILITY DOCKET SITES

1. Supply copies of all sampling data, on-site and off-site, including location map, detection limits (see definitions below), raw data sheets, QA/QC documents, date(s) sampled, analytical method(s) used, well or boring logs, and sampling technique(s).

2. Locate and identify on a map all known or suspected sources (see definition below). Supply all information about source(s) such as: dates of operation, use, or spillage; amounts of material deposited, stored, or spilled; dimensions of source(s); known or suspected hazardous substances (see definition below), etc.

3. Provide a description of all aquifers beneath the site, including description of overlying materials, depth first encountered, thickness, and composition.

4. For each source, choose one description from Table 1 that describes the ground water containment. Provide complete documentation (i.e. engineering diagrams, photographs {originals} as to why the source meets that description and not any other in the Table.

5. Provide the location of all drinking water wells in all aquifers beneath site in 4 mile radius from the site (property boundary) by HRS distance ring and locate the wells within a one mile radius on a 7.5 minute topographical map. Provide information on depth of well(s), screening interval(s), depth aquifer(s) encountered, population served. For multiple wells (i.e. municipal system) provide the number of wells, location of all wells (regardless of 4 mile limit), average annual pumpage of each well (regardless of 4 mile limit), and total population served by system. Include information on all standby wells.

6. Provide information and location (on 7.5 minute topographical map) of wells within 4 miles that are used to irrigate 5 or more acres of commercial food or forage crops, or watering of commercial livestock, or ingredient in commercial food preparation, or supply for aquaculture, or supply for a major or designated water recreation area, excluding drinking water use.

7. What is the average number of persons per residence for county (or counties) that site is located in per the US Census Bureau?

8. Identify and locate all surface water bodies within 2 mile of site marking off the drainage routes (shown on 7.5 minute

from the point of probable entry into surface water. For lakes, provide information on inflow and outflow.

9. For each source, choose one description from Table 2 that describes the surface water containment. Provide complete documentation (i.e. engineering diagrams, photographs {originals} as to why the source meets that description and not any other in the Table.

10. What is the number of acres in each drainage basin?

11. From Table 3, choose the predominant soil group (surface soil) which comprises the largest total area within each drainage area.

12. What is the 2 year, 24 hour rainfall?

13. From Table 4, choose the floodplain category for each source (supply FEMA floodplain map) and determine if each source meets the criteria from Table 5 (engineer's certification).

14. Provide the location of all drinking water intakes within 15 downstream miles (rivers) or 15 mile radius (lakes, bays, etc.). Provide information on population served. For multiple intakes (i.e. municipal system) provide information on the number of intakes, location of all intakes (regardless of 15 mile limit), average annual pumpage of each intake (regardless of 15 mile limit), and total population served by system. Include information on all standby intakes.

15. Provide information and location of intakes within 15 miles downriver (radius in lake or bay) that are used to irrigate 5 or more acres of commercial food or forage crops, or watering of commercial livestock, or ingredient in commercial food preparation, or supply for aquaculture, or supply for a major or designated water recreation area, excluding drinking water use.

16. Is any surface water body 15 miles downriver (radius in lakes or bay) used for drinking water?

17. What is the average human food chain production (pounds per year) for each surface water body 15 miles downriver or 15 mile radius in lake?

18. Within a 4 mile radius from the site <u>and</u> 15 miles downriver or radius in lake, identify all sensitive environments that exist. Provide original documentation (USF&W, Natural Heritage Database, State agencies, NOAA, etc.) and locate each by HRS distance ring. Note that there could be multiple sensitive environments within a sensitive environment.

19. What is the linear frontage of all wetlands 15 miles downriver or 15 mile radius in lake?

20. What is the location and number of persons residing, working, attending school or day care within 200 feet of each source?

21. Identify all terrestrial sensitive environments that exist on-site. Provide original documentation (USF&W, Natural Heritage Database, State agencies, NOAA, etc.) and locate each on a 7.5 minute topographical map. Note that there could be multiple sensitive environments within a sensitive environment.

22. For each source, choose one description from Table 8 that describes the accessibility to a human population. Provide complete documentation (i.e. engineering diagrams, photographs {originals}) as to why the source meets that description and not any other in the Table.

23. What is the total number of people in following distance rings from source(s)?:

0-1/4 mile
1/4-1/2 mile
1/2-1 mile
1-2 miles
2-3 miles
3-4 miles

Use 1990 Census data and/or actual house counts. Document how calculated.

24. For each source, choose one description from Table 9 that describes the gaseous containment. Provide complete documentation (i.e. engineering diagrams, photographs {originals}) as to why the source meets that description and not any other in the Table. From Table 10, choose the appropriate description of each source type. For each source, choose one description from Table 11 that describes the particulate containment. Provide complete documentation (i.e. engineering diagrams, photographs {originals} as to why the source meets that description and not any other in the Table.

25. What is the location and area (in acres) of all wetlands within 4 miles of site?

26. Contact EPA Regional Office immediately if any radionuclides are present or suspected at site and supply all radiological information known to date.

27. For all of the above information, use primary data sources and supply 2 copies or specify where copies may be obtained.

28. Have any removals or remedial actions taken place at site? If yes, then submit ALL information pertaining to action taken.

29. If information relevant to a question already has been provided to EPA, your answer may precisely cite the previous submittal by title, date, page and paragraph number rather than resubmit the information. To assist in your efforts, also enclosed is a copy of EPA's draft Preliminary Assessment Guidance.

DEFINITIONS

Detection Limit (DL):

Lowest amount that can be distinguished from the normal random "noise" of an analytical instrument or method. For this submission, the detection limit used is the method detection limit (MDL) or, for real-time instruments, the detection limit of the instrument as used in the field.

Hazardous Substance:

CERCLA hazardous substances, pollutants, and contaminant as defined in CERCLA sections 101(14) and 101(33).

Method Detection Limit (MDL):

Lowest concentration of an analyte that a method can detect reliably in either a sample or blank.

Sample Quantitation Limit (SQL):

Quantity of a substance that can reasonably be quantified given the methods of analysis and sample characteristics that may affect quantification (for example, dilution, concentration).

Site:

Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include areas between sources.

Source:

Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. Sources do not include those volumes of air, ground water, surface water, or surface water sediments that have become contaminated by migration, except: in the case of either a ground water plume with no identified source or contaminated surface water sediments with no identified source, the plume may be considered a source.

Table 1

All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)

Evidence of hazardous substance migration from source area (i.e. source area includes source and any associated containment structures).
No liner
No evidence of hazardous substance migration from source area, a liner, and:
(a) None of the following present (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.
(b) Any one of the three items in (a) present
(c) Any two of the items in (a) present
(d) All three items in (a) present plus a functioning ground water monitoring system
(e) All items in (d) present plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area.
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, functioning ground water monitoring system, and:
(f) Only one of the following deficiencies present in containment (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained runon control system and runoff management system, or (3) no or nonmaintained engineered cover.
(g) None of the deficiencies in (f) present
Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present

Surface Impoundment

Evidence of hazardous substance migration from surface impoundment
No liner
Free liquids present with either no diking, unsound diking, or diking that is not regularly inspected and maintained
No evidence of hazardous substance migration from surface impoundment, free liquids present, sound diking that is regularly inspected and maintained, adequate freeboard, and:
(a) Liner
(b) Liner with functioning leachate collection and removal system below liner, and functioning ground water monitoring system.
(c) Double liner with functioning leachate collection and removal system between liners, and functioning ground water monitoring system.
No evidence of hazardous substance migration from surface impoundment and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).

Land Treatment

Evidence of hazardous substance migration from land treatment zone
No functioning, maintained, run-on control and runoff management system
No evidence of hazardous substance migration from land treatment zone and:
(a) Functioning and maintained run-on control and runoff management system
(b) Functioning and maintained run-on control and runoff management system, and vegetative cover established over entire land treatment area.
(c) Land treatment area maintained in compliance with 40 CFR 264.280

Containers

All containers buried
Evidence of hazardous substance migration from container area (i.e., container area includes containers and any associated containment structures).
No liner (or no essentially impervious base) under container area
No diking (or no similar structure) surrounding container area
Diking surrounding container area unsound or not regularly inspected and maintained
No evidence of hazardous substance migration from container area, container area surrounded by sound diking that is regularly inspect ed and maintained, and:
(a) Liner (or essentially impervious base) under container area
(b) Essentially impervious base under container area with liquids collection and removal system
(c) Containment system includes essentially impervious base, liquids collection system, sufficient contain 10 percent of volume of all containers, and functioning and maintained run-on control; plus functioning ground water monitoring system, and spilled or leaked hazardous substances and accumulated precipitation removed in timely manner to prevent overflow of collection system, at least weekly inspection of containers, hazardous substances in leaking or deteriorating containers transferred to containers in good condition, and containers sealed except when waste is added or removed.
(d) Free liquids present containment system has sufficient capacity to hold total volume of all containers and to provide adequate freeboard, single liner under container area with functioning leachate collection and removal system below liner, and functioning ground water monitoring system.
(e) Same as (d) except: double liner under container area with functioning leachate collection and removal system between liners.
Containers inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any unsealed or ruptured containers, liquids or materials containing free liquids not deposited in any container, and functioning and maintained run-off control present
No evidence of hazardous substance migration from container area, containers leaking, and all free liquids eliminated at closure (either by removal of liquid or solidification of remaining wastes and waste residues).

Tank

Below-ground tank
Evidence of hazardous substance migration from tank area (i.e., tank area includes tank, ancillary equipment such as piping, and any associated containment structures).
Tank and ancillary equipment not provided with secondary containment, (e.g., liner under tank area, vault system, double wall).
No diking (or no similar structure) surrounding tank and ancillary equipment
Diking surrounding tank and ancillary equipment unsound or not regularly inspected and maintained.
No evidence of hazardous substance migration from tank area, tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained, and:

(a) Tank and ancillary equipment provided with secondary containment
(b) Tank and ancillary equipment provided with secondary containment with leak detection and collection system.
(c) Tank and ancillary equipment provided with secondary containment system that detects and collects spilled or leaked hazardous substances and accumulated precipitation and has sufficient capacity to contain 110 percent of volume of largest tank within containment area, spilled or leaked hazardous substances and accumulated precipitation removed in timely manner, at least weekly inspection of tank and secondary containment system, all leaking or unfit-for-use tank systems promptly responded to, and functioning ground water monitoring system.
(d) Containment system has sufficient capacity to hold volume of all tanks within tank containment area and to provide adequate freeboard, single liner under that containment area with functioning leachate collection and removal system below liner, and functioning ground water monitoring system.
(e) Same as (d) except double liner under tank containment area with functioning leachate collection and removal system between liners.

Tank is above ground, and inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any material released from tank, liquids or materials containing free liquids not deposited in any tank, and functioning and maintained run-on control present.

Table 2

All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)

Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures)
No evidence of hazardous substance migration from source areas and:

(a) Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.
(b) Any one of the two items in (a) present
(c) Any two of the following present. (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) liner with functioning leachate collection and removal system immediately above liner.
(d) All items in (c) present
(e) All items in (c) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area

No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, and:

(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained runon control system and runoff management system, or (3) no or nonmaintained engineered cover.
(g) None of the deficiencies in (f) present

Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present

Surface Impoundment

Evidence of hazardous substance migration from surface impoundment
Free liquids present with either no diking, unsound diking, or diking that is not regularly inspected and maintained
No evidence of hazardous substance migration from surface impoundment, free liquids present, sound diking that is regularly inspected and maintained, adequate freeboard, and:

(a) No liner
(b) Liner
(c) Liner with functioning leachate collection and removal system below liner
(d) Double liner with functioning leachate collection and removal system between liners

No evidence of hazardous substance migration from surface impoundment and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).

Land Treatment

Evidence of hazardous substance migration from land treatment zone
No functioning and maintained run-on control and runoff management system
No evidence of hazardous substance migration from land treatment zone and:

(a) Functioning and maintained run-on control and runoff management system
(b) Functioning and maintained run-on control and runoff management system, and vegetative cover established over entire land treatment area.
(c) Land treatment area maintained in compliance with 40 CFR 264.280

Containers

All containers buried
Evidence of hazardous substance migration from container area (i.e., container area includes containers and any associated containment structures).
No diking (or no similar structure) surrounding container area
Diking surrounding container area unsound or not regularly inspected and maintained
No evidence of hazardous substance migration from container area and container area surrounded by sound diking that is regularly inspected and maintained.
No evidence of hazardous substance migration from container area, container area surrounded by sound diking that is regularly inspected and maintained, and:

(a) Essentially impervious base under container area with liquids collection and removal system;
(b) Containment system includes essentially impervious base, liquids collection system, sufficient capacity to contain 10 percent of volume of all containers, and functioning and maintained run-on control; and spilled or leaked hazardous substances and accumulated precipitation removed in timely manner to prevent overflow of collection system, at least weekly inspection of containers, hazardous substances in leaking or deteriorating containers transferred to containers in good condition, and containers sealed except when waste is added or removed.
(c) Free liquids present containment system has sufficient capacity to hold total volume of all containers and to provide adequate freeboard, and single liner under container area with functioning leachate collection and removal system below liner.
(d) Same as (c) except: double liner under container area with functioning leachate collection and removal system between liners Containers inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any unsealed or ruptured containers, liquids or materials containing free liquids not deposited in any container, and functioning and maintained run-on control present.

No evidence of hazardous substance migration from container area, containers leaking, and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).

Tank

Below-ground tank
Evidence of hazardous substance migration from tank area (i.e., tank area includes tank, ancillary equipment such as piping, and any associated containment structures).
No diking (or no similar structure) surrounding tank and ancillary equipment
Diking surrounding tank and ancillary equipment unsound or not regularly inspected and maintained
No evidence of hazardous substance migration from tank area and tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained.
No evidence of hazardous substance migration from tank area, tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained, and:

(a) Tank and ancillary equipment provided with secondary containment (e.g., liner under tank area, vault system, double-wall) with leak detection and collection system.
(b) Tank and ancillary equipment provided with secondary containment system that detects and collects spilled or leaked hazardous substances and accumulated precipitation and has sufficient capacity to contain 110 percent of volume of largest tank within containment area, spilled or leaked hazardous substances and accumulated precipitation removed in a timely manner, at least weekly inspection of tank and secondary containment system, and all leaking or unfit-for-use tank systems promptly responded to.
(c) Containment system has sufficient capacity to hold total volume of all tanks within the tank containment area and to provide adequate freeboard, and single liner under tank containment area with functioning leachate collection and removal system below liner.
(d) Same as (c) except double liner under tank containment area with functioning leachate collection and removal system between liners.

Tank is above ground, and inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any material released from tank, liquids or materials containing free liquids not deposited in any tank, and functioning and maintained run-on control present.

Table 3

Surface Soil Description

Course-textured soils with high infiltration rates (for example, sands, loamy sands)
Medium-textured soils with moderate infiltration rates (for example, sandy loams, loams)
Moderately fine-textured soils with low infiltration rates (for example, silty loams, silts, sandy clay loams)
Fine-textured soils with very low infiltration rates (for example, clays, sandy clays, silty clay loams, clay loams, silty clays); or impermeable surfaces (for example, pavement)

Table 4

Floodplain Categories

Source floods annually
Source in 10-year floodplain
Source in 100-year floodplain
Source in 500-year floodplain
None of the above

Table 5

Flood Containment

Documentation that containment at the source is designed, constructed, operated, and maintained to prevent a washout of hazardous substances by the flood being evaluated (see floodplain category)

Table 6

Sensitive Environments

Critical habitat[a] for Federal designated endangered or threatened species
Marine Sanctuary
National Park
Designated Federal Wilderness Area
Areas identified under Coastal Zone Management Act[b]
Sensitive areas identified under National Estuary Program[c] or Near Coastal Waters Program[d]
Critical areas identified under the Clean Lakes Program[e]
National Monument[f]
National Seashore Recreational Area
National Lakeshore Recreational Area
Habitat known to be used by Federal designated or proposed endangered or threatened species
National Preserve
National or State Wildlife Refuge
Unit of Coastal Barrier Resources System
Coastal Barrier (undeveloped)
Federal land designated for protection of natural ecosystems
Administratively Proposed Federal Wilderness Area
Spawning areas critical[g] for the maintenance of fish/shellfish species within river, lake, or coastal tidal waters
Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time
Terrestrial areas utilized for breeding by large or dense aggregations of animals[h]
National river reach designated as Recreational
Habitat known to be used by State designated endangered or threatened species
Habitat known to be used by species under review as to its Federal endangered or threatened status
Coastal Barrier (partially developed)
Federal designated Scenic or Wild River
State land designated for wildlife or game management
State designated Scenic or Wild River
State designated Natural Areas
Particular areas, relatively small in size, important to maintenance of unique biotic communities
State designated areas for projection or maintenance of aquatic life[i]

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a Critical habitat as defined in 50 CFR 424.02.
b Areas identified in State Coastal Zone Management plans as requiring protection because of ecological value
c National Estuary Program study areas (Subareas within subareas) identified in Comprehensive Conservation and Management Plans as requiring protection because they support critical life stages of key estuarine species (Section 320 of Clean Water Act, as amended).
d Near Coastal Waters as defined in Sections 104(b)(3), 304(1), 319, and 320 of Clean Water Act, as amended.
e Clean Lakes Program critical areas (subareas within lakes, or in some cases entire small lakes) identified by State Clean Lake Plans as critical habitat (Section 314 of Clean Water Act, as amended).
f Use only for air migration pathway.
g Limit to areas described as being used for intense or concentrated spawning by a given species.
h For the air migration pathway, limit to terrestrial vertebrate species. For the surface water migration pathway, limit to terrestrial vertebrate species with aquatic or semiaquatic foraging habits.
i Areas designated under Section 305(a) of Clean Water Act, as amended.

Table 7

Terrestrial sensitive environments

Terrestrial critical habitat[a] for Federal designated endangered or threatened species
National Park
Designated Federal Wilderness Area
National Monument
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species
National Preserve (terrestrial)
National or State Terrestrial Wildlife Refuge
Federal land designated for protection of natural ecosystems
Administratively proposed Federal Wilderness Area
Terrestrial areas utilized for breeding by large or dense aggregations of animals[b]
Terrestrial habitat known to be used by State designated endangered or threatened species
Terrestrial habitat known to be used by species under review as to its Federal designated endangered or threatened status
State lands designated for wildlife or game management
State designated Natural Areas
Particular areas, relatively small in size, important to maintenance of unique biotic communities

a Critical habitat as defined in 50 CFR 42
b Limit to vertebrate species.

Table 8

Area of observed contamination

Designated recreational area
Regularly used for public recreation (for example, fishing, hiking, softball)
Accessible and unique recreational area (for example, vacant lots in urban area)
Moderately accessible (may have some access improvements-for example, gravel road), with some public recreation use
Slightly accessible (for example, extremely rural area with no road improvement), with some public recreation use
Accessible, with no public recreation use
Surrounded by maintained fence or combination of maintained fence and natural barriers
Physically inaccessible to public, with no evidence of public recreation use

Table 9

Gas containment description

All situations except those specifically listed below
Evidence of biogas release
Active fire within source
Gas collection/treatment system functioning, regularly inspected, maintained, and completely covering source
Source substantially surrounded by engineering windbreak and no other containment specifically described in this table applies
Source covered with essentially impermeable, regularly inspected, maintained cover
Uncontaminated soil cover >3 feet:
- Source substantially vegetated with little exposed soil
- Source lightly vegetated with much exposed soil
- Source substantially devoid of vegetation

Uncontaminated soil cover $\geq$ 1 foot and $\leq$ 3 feet:
- Source heavily vegetated with essentially no exposed soil
- Cover soil resistant to gas migration[a]
- Cover soil type not resistant to gas migration[a] or unknown
- Source substantially vegetated with little exposed soil and cover soil type resistant to gas migration[a]
- Other

Uncontaminated soil cover <1 foot:
- Source heavily vegetated with essentially no exposed soil and cover soil type resistant to gas migration[a]
- Other

Totally or partially enclosed within structurally intact building and no other containment specifically described in this table applies
Source consists solely of intact, sealed containers:
- Totally protected from weather by regularly inspected, maintained cover
- Other

a Consider moist fine-grained and saturated coarse-grained soils resistant to gas migration, consider all other soils nonresistant.

Table 10

Source type

Active fire area
Burn pit
Containers or tanks (buried/belowground):
- o Evidence of biogas release
- o No evidence of biogas release

Containers or tanks, not elsewhere specified
Contaminated soil (excluding land treatment)
Landfarm/land treatment
Landfill:
- o Evidence of biogas release
- o No evidence of biogas release

Pile:
- o Tailings pile
- o Scrap metal or junk pile
- o Trash pile
- o Chemical waste pile
- o Other waste piles

Surface impoundments (buried/ backfilled):
- o Evidence of biogas release
- o No evidence of biogas release

Surface impoundment (not buried/backfilled):
- o Dry
- o Other

Other types of sources, not elsewhere specified

Table 11

Particulate containment description

tuations except those specifically listed below
e contains only particulate hazardous substances totally covered by liquids
Source substantially surrounded by engineered windbreak and no other containment specifically described in this table applies
Source covered with essentially impermeable, regularly inspected, maintained cover
Uncontaminated soil cover > 3 feet:
- Source substantially vegetated with little or no exposed soil
- Source lightly vegetated with much exposed soil
- Source substantially devoid of vegetation

Uncontaminated soil cover $\geq$ 1 foot and $\leq$ 3 feet:
- Source heavily vegetated with essentially no exposed soil:
  - -Cover soil type resistant to gas migration[a]
  - -Cover soil type not resistant to gas migration[a] or unknown
- Source substantially vegetated with little exposed soil and cover soil type resistant to gas migration[a]
- Other

Uncontaminated soil cover < 1 foot:
- Source heavily vegetated with essentially no exposed soil and cover soil type resistant to gas migration[a]
- Other

Totally or partially enclosed within structurally intact building and no other containment specifically described in this table applies
Source consists solely of containers:
- All containers contain only liquids
- All containers intact, seated, and totally protected from weather by regularly inspected, maintained cover
- All containers intact and sealed
- Other

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a Consider moist fine-grained and saturated coarse-grained soils resistant to gas migration, consider all other soils nonresistant.

APPENDIX B

REAL ESTATE SUMMARY

Real estate information was collected through a real estate file search of FAA Air Navigation Stations. The purpose of this search was to define and document former FAA real property holdings and current FAA real property interests at this FAA station. The chain of ownership or leaseholds prior or subsequent to FAA's involvement with real estate parcels was not investigated. Documents obtained primarily from FAA records are referenced numerically in the following tables. Additional information was gathered from the U.S. Department of Interior, Bureau of Land Management (BLM).

Table B-1, FAA Real Estate Summary, is a chronological abstract of all documents found that are relevant in determining the former and current FAA real property holdings. In cases where the original document was not obtained, reference is made to a secondary source. Included in the table is the document number, the effective date of the document, and a summary of relevant information. The documents will be presented to FAA under separate cover as an appendix to each Environmental Compliance Investigation Report (ECIR).

Table B-2, Real Estate Facility/Site Summary, briefly depicts the history of each facility/site formerly or currently held by FAA as indicated through FAA and BLM documents. The table lists the facility/site name, followed by the document number as indexed in Table B-1. Transaction dates are included to show when changes in real estate holdings were executed, along with a running total of acres held by FAA per facility/site. Each property transaction referenced is identified with comments, and the current status of each facility/site is listed in the final column.

Under this task order, real estate holdings are divided into two categories to conform to FAA functional nomenclature and include:

Acreage Owned

- Real estate acquired by FAA pursuant to such mechanisms as Public Land Order (PLO), Air Navigation Site Withdrawal (ANSW), Reservation in Patent (deed reservation), BLM Right-of-Way Grant, FAA purchase and certain real property acquired under certain less-routine mechanisms than those listed above.

Acreage Leased

- Real estate held by FAA pursuant to a lease, a license (a State of Alaska term used in the past for a lease), an agreement, a Memorandum of Understanding (MOU), an easement, a permit, or real property held under certain less-routine mechanisms than those listed above.

An accompanying real estate map (Figure B-1) delineates properties formerly owned or leased and currently owned or leased by FAA. The acreage of all facilities/sites currently held by FAA is included.

The following defines acronyms and abbreviations commonly found in FAA real estate transactions:

ACRONYMS	DEFINITION
ALS	Approach Lighting System
ANS	Air Navigation Station
ANSW	Air Navigation Site Withdrawal
ATCT	Air Traffic Control Tower
CRM	Copper River Meridian
DF	Directional Finder
DOT-PF	Alaska Department of Transporation and Public Facilities
EO	Executive Order
FSS	Flight Service Station
GS (or GSI)	Glide Slope (Indicator)
GSA	General Services Administration
HF	High Frequency
H-Marker	Nondirectional Radio Beacon
IC	Interim Conveyance
LOC	Localizer
MALS	Medium Intensity Approach Lighting System
MALSR	MALS with Runway Alignment Indicator Lights
MOU	Memorandum of Understanding
NA	Not Applicable
NDB	Nondirectional radio beacon
NOI	Notice of Intent
PLO	Public Land Order
QCD	Quitclaim Deed
RAIL	Runway Alignment Indicator Lights
RCAG	Remote Center Air/Ground Communications Facility
RCO	Remote Communications Outlet
REIL	Runway End Identification Lights
ROW	Right-of-Way
RTR	Remote Transmitter and/or Receiver Facility
RVR	Runway Visual Range
SALS	Short Approach Lighting System
SBRAZ	Low/medium frequency Adcock Radio Range
SRA	Low/medium frequency Adcock Radio Range
TACAN	Tactical Air Navigation Station
VASI	Visual Approach Slope Indicator
VHF	Very High Frequency
VOR	Very High Frequency Omnidirectional Range Station
VORTAC	Co-located VOR and TACAN

Table B-1

REAL ESTATE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Document Number	Date of Document	Summary
1	August 6, 1940	Temporary Use Agreement between Secretary of Interior and Secretary of War for use of that portion of the southwest peninsula of Annette Island lying south of North Latitude 55 05' 45", bounded by Tamgas Harbor on the east and Nicholas Passage on the west, containing 15.2 square miles. The War Department chose this property as the most feasible location for placement of an operating airfield in the vicinity of Ketchican.
2	February 5, 1947	Letter from Under Secretary of War to Assistant Secretary of Commerce in response to request for transfer of Airport and radio facilities at Annette Island. The Civil Aeronautics Administration will enter into a lease with Metlakatla Indians for the use of their land (4,880 acres) and will permit Army and Navy aircraft transient privileges at the airfield.
3	December 13, 1948	Contract No. C5ca-284-A leases 4,880 acres of land to FAA from Metlakahtlan Indians for the operations and maintenance of an airport, navigational facilities and related sites.
4	December 24, 1954	Supplemental Agreement #1 to Contract No. C5ca-284-A adds a power line right-of-way.
5	March 15, 1957	Supplemental Agreement #2 to Contract No. C5ca-284-A amends the power line right-of-way.
6	December 1, 1961	Supplemental Agreement #3 to Contract No. C5ca-284-A cancels Suplemental Agreements #1 and #2 and grants Alaska Telephone Corporation a right to use the lessor's pole line within the power line right-of-way.
7	February 20, 1963	Supplemental Agreement #4 to Contract No. C5ca-284-A enlarges the area of the original lease, adding 68.870 acres to the north boundary of the lease for the construction of a VORTAC.
8	January 1, 1964	ANNETTE ISLAND Status of Facilities describes an office building under a use permit and located in U.S. Coast Guard Hangar, a utility building, housing buildings and associated FAA real properties.
9	February 17, 1965	Supplemental Agreement #5 to Contract No. C5ca-284-A decreases the area under lease by 94.46 acres to allow for Annette Airport-Metlakatla Road right-of-way.
10	July 1, 1965	Supplemental Agreement #6 to Contract No. C5ca-284-A deletes 1.0 acre from the lease for use as an electic power generation site.
11	July 1, 1965	Supplemental Agreement #7 to Contract No. C5ca-284-A decreases the area under lease by deleting 84.9 acres at Moss Point.
12	July 1, 1969	Supplemental Agreement #8 to Contract No. C5ca-284-A decreases the are under lease by 485 acres.
13	February 27, 1973	FAA Internal Memo from AAL-421 to AAL-50 regarding facilities to be retained at Annette Island after July 1, 1973. Facilities include RCAG, RTR, SRA and VORTAC.

Table B-1

REAL ESTATE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Document Number	Date of Document	Summary
14	July 16, 1973	Deletion of Title 14, Chapter I, Part 167 - ANNETTE ISLAND, ALASKA, AIRPORT, Docket No. 13037, is initiated in response to the opening of Ketchikan Airport, which is expected to accept all large air carrier aircraft landings and a considerable number of other landings previously made at Annette Island Airport. Annette Island Airport will continue to be available for aircraft after July 31, 1973 in an unlighted and unattended condition.
15	November 23, 1973	Negative Environmental Declaration for the proposed termination of the 1948 lease, a new lease for the en-route navigational aids including VOR, RCAG, SBRA Range and Remote Receiver, and assumption of operation of the Annette Island Airport by the Metlakatlan Indian Community. The instrument landing system including localizer, glide slope and markers is to be decommisioned.
16	December 1, 1973	Termination Agreement between the Metlakatla Indian Community and the United States of America ends the lease established in 1948. Document is unsigned.
17	December 1, 1973	Assumption Agreement provides for the release and transfer all rights, powers, privileges and benefits associated with Annette Island Airport from FAA to the Metlakatla Indian Community.
18	December 1, 1973	Lease No. DOT-FA73-AL-8046 between Metlakatla Indian Community and The United States of America whereby the government leases 91.82 acres for a new VOR site, 46.14 acres for a Remote Receiver, 10 acres for a SBRA Range and 5.7 acres for a RCAG.
19	July 12, 1978	Amendment #1 to Lease No. DOT-FA73-AL-8046 enlarges the leased property to include a Directional Finder site of 5.58 acres and establishes a 20 foot wide cable right-of-way from the RCAG site to the SBRA site.
20	Feburary 2, 1986	Amendment #2 to Lease No. DOT-FA73-AL-8046 adds to the lease 0.92 acres for a Directional Finder site.
21	October 1, 1986	Amendment #3 to Lease No. DOT-FA73-AL-8046 deletes the Directional Finder site containing 5.58 acres from the lease.
22	September 6, 1989	Amendment of Solicitation/Modification of Contract deletes the Remote Receiver, consisting of 46.14 acres from Lease No. DOT-FA73-AL-8046.
23	September 13, 1989	Transfer Agreement, Contract No. DTFA-89-B-89008, transfers Building No. 411 and associated real property to Metlakatla Indian Community in lieu of restoration of the land.

Table B-2

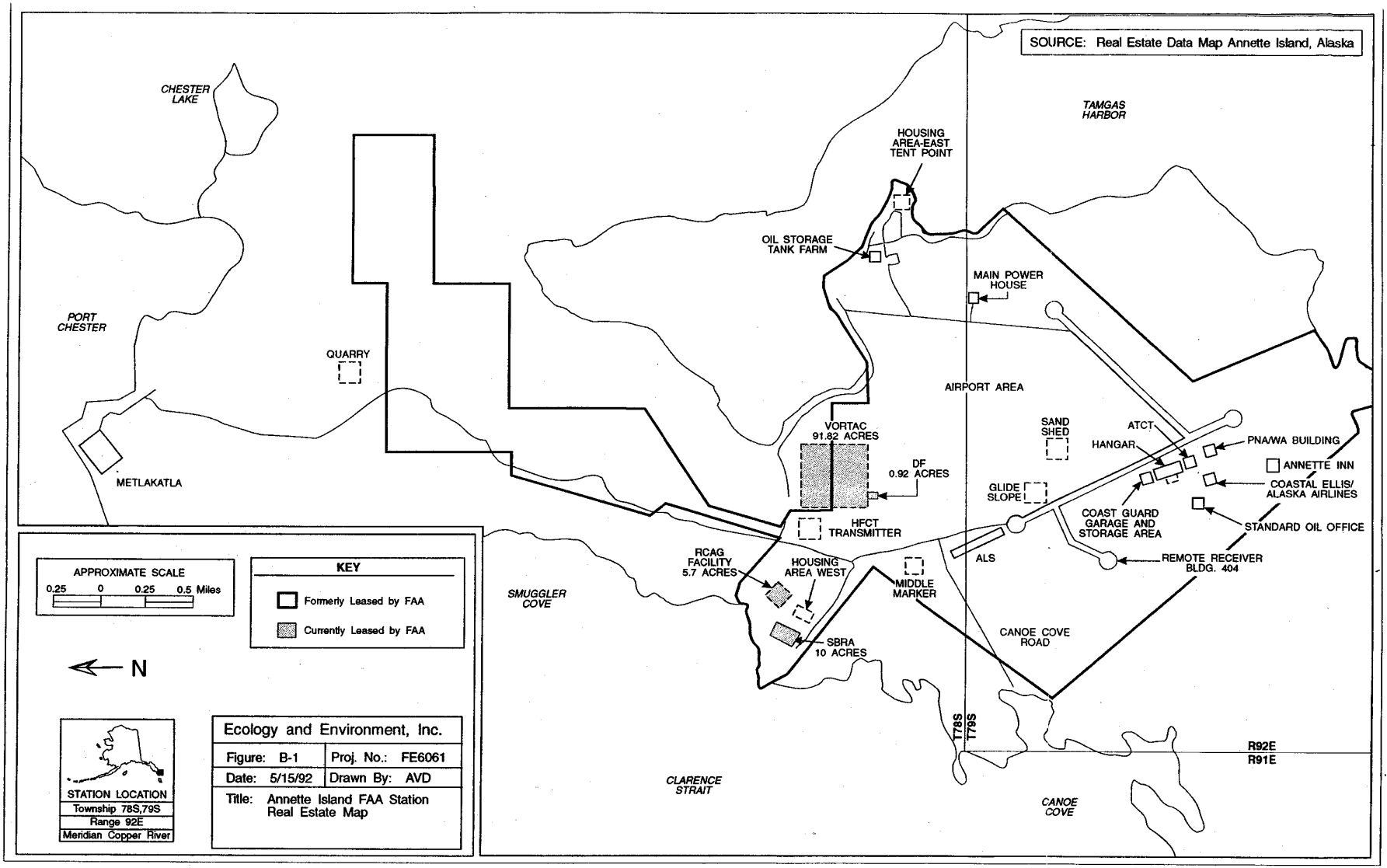
FAA FACILITY/SITE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Site Name	Document No.	Transaction Dates	Acres	Comments	Current Status
Airport	2, 3	December 13, 1948	4,880	Civil Aeronautics Authority takes over control of airport from War Department and enters into a lease with Metlakatla Indian Community.	previously leased
	8			Office in Coast Guard Hangar under use permit dated January 22, 1959, utility building and housing buildings owned and some new buildings constructed by FAA.	
	17	December 1, 1973		Assumption Agreement in 1973 places Metlakatla Indian Community in control of Airport.	
VORTAC	7	February 20, 1963	68.87	Added to original Contract No. C5ca-284-A in Supplemental Agreement #4.	91.82 acres currently leased
	13, 15, 18	December 1, 1973 - June 30, 1993	91.82	Retained after transfer of airport to Metlakatla Indian Community. Currently located on 91.82 acres in Lease No. DOT-FA-73-AL-8046.	
RCAG	2, 3	December 13, 1948	5.7	Land included in original FAA Contract No. C5ca-284-A.	5.7 acres currently leased
		December 1, 1973 - June 30, 1993		Retained after transfer of Airport to Metlakatla Indian Community in Lease No. DOT-FA73-AL-8046.	
DF	19	July 12, 1978	5.7	Added to Lease No. DOT-FA73-AL-8046 by Amendment #1.	0.92 acre currently leased
	20	February 2, 1986		A new DF site was added to the lease in Amendment #2.	
	21	October 1, 1986 - June 30, 1993	0.92	The older DF site was deleted from the lease in Amendment #3.	

Table B-2

FAA FACILITY/SITE SUMMARY
ANNETTE ISLAND FAA STATION
TASK ORDER NO. 4
ANNETTE ISLAND, ALASKA

Site Name	Document No.	Transaction Dates	Acres	Comments	Current Status
Remote Receiver	3, 15, 18	December 13, 1948	46.14	Land included in original FAA Contract No. C5ca-284-A and retained after transfer of Airport to Metlakatla Indian Community in Lease No. DOT-FA73-AL-8046.	previously leased
	22	September 6, 1989		Deleted from lease on September 6, 1989.	
NDB/H-Marker SBRA	3, 13, 15, 18	December 13, 1948 - June 30, 1993	10	Land included in original FAA Contract No. C5ca-284-A and retained after transfer of Airport to Metlakatla Indian Community in Lease No. DOT-FA73-AL-8046.	10 acres currently leased
Easements	4, 5, 6, 19	Not summarized			
SBRA (NDB/H-Marker)	2, 3	December 13, 1948		Land included in original FAA Contract No. C5ca-2840A.	10 acres currently leased
	13, 15, 18	December 1, 1973	10	Retained after transfer of airport to Metlakatla Indian Community in Lease No. DOT-FA73-AL-8046.	


SOURCE: Real Estate Data Map Annette Island, Alaska
CHESTER LAKE
TAMGAS HARBOR
HOUSING AREA-EAST TENT POINT
OIL STORAGE TANK FARM
MAIN POWER HOUSE
PORT CHESTER
QUARRY
AIRPORT AREA
VORTAC 91.82 ACRES
DF 0.92 ACRES
SAND SHED
ATCT
HANGAR
PNA/WA BUILDING
ANNETTE INN
COASTAL ELLIS/ ALASKA AIRLINES
METLAKATLA
GLIDE SLOPE
HFCT TRANSMITTER
COAST GUARD GARAGE AND STORAGE AREA
STANDARD OIL OFFICE
RCAG FACILITY 5.7 ACRES
HOUSING AREA WEST
ALS
REMOTE RECEIVER BLDG. 404
MIDDLE MARKER
SMUGGLER COVE
CANOE COVE ROAD
SBRA 10 ACRES
T78S
T79S
R92E
R91E
CLARENCE STRAIT
CANOE COVE
APPROXIMATE SCALE
0.25 0 0.25 0.5 Miles
KEY
Formerly Leased by FAA
Currently Leased by FAA
N
STATION LOCATION
Township 78S,79S
Range 92E
Meridian Copper River
Ecology and Environment, Inc.
Figure: B-1
Proj. No.: FE6061
Date: 5/15/92
Drawn By: AVD
Title: Annette Island FAA Station Real Estate Map